SEQUENCE LISTING

<110> Kogel, Karl-Heinz
       Huckelhoven, Ralph
       Trujillo, Marco

<120> Method for Obtaining the pathogenic resistance in plants

<130> 12810-00067-US

<140> US 10/522,106
<141> 2005-01-24

<160> 24

<170> PatentIn version 3.3

<210> 1
<211> 337
<212> DNA
<213> Hordeum vulgare

<220>
<221> CDS
<222> (2)..(337)
<223> coding for NADPH oxidase (fragment)

<400> 1
g ttt aaa gga atc atg aat gag att gct gaa cta gat caa agg aat atc 49
  Phe Lys Gly Ile Met Asn Glu Ile Ala Glu Leu Asp Gln Arg Asn Ile
    1   5   10   15
att gag atg cac aac tat ctc aca agt gtt tat gag gaa ggg gat gct   97
Ile Glu Met His Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala
            20   25   30
cgg tca gca ctc atc aca atg ctg caa gct ctc aac cat gcc aag aat 145
Arg Ser Ala Leu Ile Thr Met Leu Gln Ala Leu Asn His Ala Lys Asn
        35   40   45
ggt gtc gat gta gtg tct ggm act cga gtc cgg aca cat ttt gca aga 193
Gly Val Asp Val Val Ser Xaa Thr Arg Val Arg Thr His Phe Ala Arg
    50   55   60
cca aat ttt aag agg gtg ctg tct aag gta gcc gcc aaa cat cct tat 241
Pro Asn Phe Lys Arg Val Leu Ser Lys Val Ala Ala Lys His Pro Tyr
 65   70   75   80
gcc aag ata gga gtg ttc tat tgc gga gct cca gtt ctg gcg cag gaa 289
Ala Lys Ile Gly Val Phe Tyr Cys Gly Ala Pro Val Leu Ala Gln Glu
                85   90   95
cta agc aac ctt tgc cat gag ttc aat ggc aaa tgc acg aca aaa ttc 337
Leu Ser Asn Leu Cys His Glu Phe Asn Gly Lys Cys Thr Thr Lys Phe
            100   105   110

<210> 2
<211> 112
<212> PRT
<213> Hordeum vulgare

<220>
<221> misc_feature
<222> (55)..(55)
<223> The 'Xaa' at location 55 stands for Gly.

<400> 2
Phe Lys Gly Ile Met Asn Glu Ile Ala Glu Leu Asp Gln Arg Asn Ile

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         1                 5                         10                        15
Ile Glu Met His Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala
                20                         25                  30
Arg Ser Ala Leu Ile Thr Met Leu Gln Ala Leu Asn His Ala Lys Asn
            35                         40                  45
Gly Val Asp Val Val Ser Xaa Thr Arg Val Arg Thr His Phe Ala Arg
        50                         55                  60
Pro Asn Phe Lys Arg Val Leu Ser Lys Val Ala Ala Lys His Pro Tyr
65                         70                  75                  80
Ala Lys Ile Gly Val Phe Tyr Cys Gly Ala Pro Val Leu Ala Gln Glu
                85                         90                  95
Leu Ser Asn Leu Cys His Glu Phe Asn Gly Lys Cys Thr Thr Lys Phe
            100                        105                 110
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<210> 3
<211> 2832
<212> DNA
<213> Oryza sativa

<220>
<221> CDS
<222> (1)..(2829)
<223> coding for NADPH oxidase

<400> 3
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Met Arg Gly Gly Ala Ser Ser Gly Pro Gln Arg Trp Gly Ser Ala Gly
 1               5                       10                      15
acg aca ccg cgg tcg ctg agc acg ggc tcg tcg ccg cgc ggg tcc gac     96
Thr Thr Pro Arg Ser Leu Ser Thr Gly Ser Ser Pro Arg Gly Ser Asp
                20                      25                      30
gac cgg agc tcc gac gac ggg gag gag ctg gtc gag gtc acg ctc gac    144
Asp Arg Ser Ser Asp Asp Gly Glu Glu Leu Val Glu Val Thr Leu Asp
            35                      40                      45
ctg cag gac gac gac acc att gtg ctt cgg agc gtc gag ccc gcg gcg    192
Leu Gln Asp Asp Asp Thr Ile Val Leu Arg Ser Val Glu Pro Ala Ala
        50                      55                      60
gcg gcg gcg gcg ggg gtg ggg gcg ggg gcg ggg gcg gcg tcg gcg cgg    240
Ala Ala Ala Ala Gly Val Gly Ala Gly Ala Gly Ala Ala Ser Ala Arg
65                      70                      75                      80
ggg gag ctc acg ggt ggc ccg tcg tcg tcg tcg tcg cgg tcg agg tcg    288
Gly Glu Leu Thr Gly Gly Pro Ser Ser Ser Ser Ser Arg Ser Arg Ser
                85                      90                      95
ccg tcg atc cgg agg agc tcg tcg cac cgg ctg ctg cag ttc tcg cag    336
Pro Ser Ile Arg Arg Ser Ser Ser His Arg Leu Leu Gln Phe Ser Gln
                100                     105                     110
gag ctc aag gcg gag gcc atg gcc cgg gcg cgg cag ttc tcg cag gac    384
Glu Leu Lys Ala Glu Ala Met Ala Arg Ala Arg Gln Phe Ser Gln Asp
            115                     120                     125
ctg acc aag cgg ttc ggc cgc agc cac agc cgc agc gaa gcg cag gcg    432
Leu Thr Lys Arg Phe Gly Arg Ser His Ser Arg Ser Glu Ala Gln Ala
        130                     135                     140
ccg tcg ggc ctc gag tcc gcg ctc gcc gcc cgc gcc gcg cgg cgg cag    480
Pro Ser Gly Leu Glu Ser Ala Leu Ala Ala Arg Ala Ala Arg Arg Gln
145                     150                     155                     160
cgc gcg cag ctc gac cgc aca cgc tcc ggc gcc cac aag gcg ctc cgc    528
Arg Ala Gln Leu Asp Arg Thr Arg Ser Gly Ala His Lys Ala Leu Arg
                165                     170                     175
ggc ctc cgc ttc atc agc agc aac aag gcc aac aac gcc tgg atg gag    576
Gly Leu Arg Phe Ile Ser Ser Asn Lys Ala Asn Asn Ala Trp Met Glu
            180                     185                     190
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gtg cag gcc aac ttc gac cgc ctc gcc cgc gac ggc tac ctc tcc cgc    624
Val Gln Ala Asn Phe Asp Arg Leu Ala Arg Asp Gly Tyr Leu Ser Arg
        195                 200                 205
tcc gac ttc gcc gaa tgc atc ggg atg acg gaa tcg aag gag ttc gcg    672
Ser Asp Phe Ala Glu Cys Ile Gly Met Thr Glu Ser Lys Glu Phe Ala
        210                 215                 220
ctc gag ctg ttc gac acg ctg agc cgg cga cga cag atg aag gtg gac    720
Leu Glu Leu Phe Asp Thr Leu Ser Arg Arg Arg Gln Met Lys Val Asp
225                 230                 235                 240
acg att aac aag gat gaa ctc cgc gag atc tgg cag cag atc acc gat    768
Thr Ile Asn Lys Asp Glu Leu Arg Glu Ile Trp Gln Gln Ile Thr Asp
                245                 250                 255
aac agc ttc gac tcc cgt ctc caa atc ttc ttc gaa atg gtg gat aag    816
Asn Ser Phe Asp Ser Arg Leu Gln Ile Phe Phe Glu Met Val Asp Lys
        260                 265                 270
aac gcg gac ggc cgg att acg gag gcg gag gtg aaa gag att att atg    864
Asn Ala Asp Gly Arg Ile Thr Glu Ala Glu Val Lys Glu Ile Ile Met
        275                 280                 285
ttg agc gcg tct gcc aat aaa ctg tcg agg ctt aag gag caa gca gaa    912
Leu Ser Ala Ser Ala Asn Lys Leu Ser Arg Leu Lys Glu Gln Ala Glu
        290                 295                 300
gag tac gcc gct ttg atc atg gag gag ctt gat cct gaa ggg ctc ggc    960
Glu Tyr Ala Ala Leu Ile Met Glu Glu Leu Asp Pro Glu Gly Leu Gly
305                 310                 315                 320
tac att gag cta tgg caa ttg gag aca ctt ctg ttg cag aaa gat acc    1008
Tyr Ile Glu Leu Trp Gln Leu Glu Thr Leu Leu Leu Gln Lys Asp Thr
                325                 330                 335
tat atg aac tat agt cag gcc ctt agt tac aca agc caa gca ctg agc    1056
Tyr Met Asn Tyr Ser Gln Ala Leu Ser Tyr Thr Ser Gln Ala Leu Ser
        340                 345                 350
cag aat ctt gca ggg cta agg aag aag agt tca atc cgc aaa ata agc    1104
Gln Asn Leu Ala Gly Leu Arg Lys Lys Ser Ser Ile Arg Lys Ile Ser
        355                 360                 365
acc tct tta agc tac tat ttc gag gac aac tgg aaa cgt tta tgg gtg    1152
Thr Ser Leu Ser Tyr Tyr Phe Glu Asp Asn Trp Lys Arg Leu Trp Val
        370                 375                 380
ctt gca ttg tgg att ggg ata atg gct gga ctg ttc acc tgg aaa ttc    1200
Leu Ala Leu Trp Ile Gly Ile Met Ala Gly Leu Phe Thr Trp Lys Phe
385                 390                 395                 400
atg cag tat cgt aac cga tat gtc ttt gat gtg atg ggc tac tgt gtc    1248
Met Gln Tyr Arg Asn Arg Tyr Val Phe Asp Val Met Gly Tyr Cys Val
                405                 410                 415
aca aca gca aaa gga gct gct gaa acc cta aag ctg aat atg gca att    1296
Thr Thr Ala Lys Gly Ala Ala Glu Thr Leu Lys Leu Asn Met Ala Ile
        420                 425                 430
atc ctc ctg cca gta tgc cgt aac acc att act tgg ttg cga agt aca    1344
Ile Leu Leu Pro Val Cys Arg Asn Thr Ile Thr Trp Leu Arg Ser Thr
        435                 440                 445
agg gct gca cgg gca cta cct ttt gat gac aac atc aac ttc cac aag    1392
Arg Ala Ala Arg Ala Leu Pro Phe Asp Asp Asn Ile Asn Phe His Lys
        450                 455                 460
act att gca gca gca att gtg gtt ggt ata atc ctc cat gca ggg aac    1440
Thr Ile Ala Ala Ala Ile Val Val Gly Ile Ile Leu His Ala Gly Asn
465                 470                 475                 480
cac ctt gta tgc gat ttt cca cgg tta ata aaa tca tca gat gag aag    1488
His Leu Val Cys Asp Phe Pro Arg Leu Ile Lys Ser Ser Asp Glu Lys
                485                 490                 495
tat gct cct ttg ggc cag tat ttt ggg gaa ata aag cca aca tat ttt    1536
Tyr Ala Pro Leu Gly Gln Tyr Phe Gly Glu Ile Lys Pro Thr Tyr Phe
        500                 505                 510
aca ttg gtc aaa gga gtg gag ggc atc act ggg gta atc atg gtt gta    1584
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Thr Leu Val Lys Gly Val Glu Gly Ile Thr Gly Val Ile Met Val Val
        515             520             525
tgc atg ata att gct ttt act cta gca acc cgg tgg ttc cgc cgt agc    1632
Cys Met Ile Ile Ala Phe Thr Leu Ala Thr Arg Trp Phe Arg Arg Ser
        530             535             540
ttg gtt aag ctt cca agg cca ttt gac aaa ctg act ggc ttc aat gcc    1680
Leu Val Lys Leu Pro Arg Pro Phe Asp Lys Leu Thr Gly Phe Asn Ala
545             550             555             560
ttt tgg tat tct cat cat ctg ttc atc att gtg tat atc gcg ctc att    1728
Phe Trp Tyr Ser His His Leu Phe Ile Ile Val Tyr Ile Ala Leu Ile
            565             570             575
gtt cat gga gag tgt cta tac ctt att cat gtc tgg tac aga aga acg    1776
Val His Gly Glu Cys Leu Tyr Leu Ile His Val Trp Tyr Arg Arg Thr
        580             585             590
aca tgg atg tat ctt tca gtg cct gtt tgc ttg tat gta ggg gag agg    1824
Thr Trp Met Tyr Leu Ser Val Pro Val Cys Leu Tyr Val Gly Glu Arg
        595             600             605
att cta agg ttc ttc agg tct ggc agt tat tct gtc cgg cta ttg aag    1872
Ile Leu Arg Phe Phe Arg Ser Gly Ser Tyr Ser Val Arg Leu Leu Lys
    610             615             620
gtg gcc ata tat cca ggt aat gtt ttg aca ctg caa atg tcc aag cct    1920
Val Ala Ile Tyr Pro Gly Asn Val Leu Thr Leu Gln Met Ser Lys Pro
625             630             635             640
ccc acg ttc cgt tac aag agt gga caa tat atg ttt gtt caa tgt cca    1968
Pro Thr Phe Arg Tyr Lys Ser Gly Gln Tyr Met Phe Val Gln Cys Pro
            645             650             655
gca gtg tct ccc ttt gaa tgg cat ccc ttc tca att act tca gca cct    2016
Ala Val Ser Pro Phe Glu Trp His Pro Phe Ser Ile Thr Ser Ala Pro
            660             665             670
ggg gat gac tac ctc agc att cat gtt cga caa ctt ggt gat tgg aca    2064
Gly Asp Asp Tyr Leu Ser Ile His Val Arg Gln Leu Gly Asp Trp Thr
            675             680             685
cga gaa ctc aag aga gta ttt gct gca gct tgt gag ccc cca gcg ggt    2112
Arg Glu Leu Lys Arg Val Phe Ala Ala Ala Cys Glu Pro Pro Ala Gly
        690             695             700
ggt aaa agc ggc ctt ctt agg gca gat gag aca act aag aaa atc tta    2160
Gly Lys Ser Gly Leu Leu Arg Ala Asp Glu Thr Thr Lys Lys Ile Leu
705             710             715             720
ccc aag ctt ctg att gat gga ccg tat ggt tct cct gct cag gat tac    2208
Pro Lys Leu Leu Ile Asp Gly Pro Tyr Gly Ser Pro Ala Gln Asp Tyr
            725             730             735
agc aag tat gat gtt tta tta ctt gtt gga tta gga att ggt gcg aca    2256
Ser Lys Tyr Asp Val Leu Leu Leu Val Gly Leu Gly Ile Gly Ala Thr
            740             745             750
ccc ttt att agc ata tta aaa gat ctt ctg aat aac atc atc aaa atg    2304
Pro Phe Ile Ser Ile Leu Lys Asp Leu Leu Asn Asn Ile Ile Lys Met
            755             760             765
gag gaa gag gag gat gct tct act gat ctt tat cca cca atg ggt cgg    2352
Glu Glu Glu Glu Asp Ala Ser Thr Asp Leu Tyr Pro Pro Met Gly Arg
        770             775             780
aat aag cca cat gtt gat ctg ggc aca ctt atg acg att acc tca aga    2400
Asn Lys Pro His Val Asp Leu Gly Thr Leu Met Thr Ile Thr Ser Arg
785             790             795             800
cca aag aag atc ttg aag acc aca aat gct tac ttt tac tgg gtg aca    2448
Pro Lys Lys Ile Leu Lys Thr Thr Asn Ala Tyr Phe Tyr Trp Val Thr
            805             810             815
cgt gag caa ggc tct ttt gat tgg ttc aaa gga gtc atg aat gaa att    2496
Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Val Met Asn Glu Ile
        820             825             830
gct gac ttg gat caa agg aat atc att gag atg cac aac tac cta aca    2544
Ala Asp Leu Asp Gln Arg Asn Ile Ile Glu Met His Asn Tyr Leu Thr
```

```
              835                      840                      845
agc gtc tat gag gag ggg gat gcc agg tca gca ctc atc acc atg ctc    2592
Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile Thr Met Leu
    850                      855                      860
caa gct ctg aac cat gcc aag aat gga gtt gat att gtc tct ggg aca    2640
Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Thr
865                      870                      875                  880
aaa gtc cgg aca cat ttt gca cga cca aat tgg aga aag gtc ctt tct    2688
Lys Val Arg Thr His Phe Ala Arg Pro Asn Trp Arg Lys Val Leu Ser
                    885                      890                      895
aaa att tcc tcc aag cat cca tat gcc aaa ata ggt gta ttc tac tgt    2736
Lys Ile Ser Ser Lys His Pro Tyr Ala Lys Ile Gly Val Phe Tyr Cys
                900                      905                      910
gga gct cca gtc ctg gca caa gaa cta agc aaa ctt tgc cat gaa ttc    2784
Gly Ala Pro Val Leu Ala Gln Glu Leu Ser Lys Leu Cys His Glu Phe
            915                      920                      925
aac ggg aaa tgc aca acg aag ttc gaa ttc cat aag gag cat ttc tga    2832
Asn Gly Lys Cys Thr Thr Lys Phe Glu Phe His Lys Glu His Phe
    930                      935                      940
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<210> 4
<211> 943
<212> PRT
<213> Oryza sativa

<400> 4

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Thr Thr Pro Arg Ser Leu Ser Thr Gly Ser Ser Pro Arg Gly Ser Asp
            20                  25                  30
Asp Arg Ser Ser Asp Asp Gly Glu Glu Leu Val Glu Val Thr Leu Asp
        35                  40                  45
Leu Gln Asp Asp Asp Thr Ile Val Leu Arg Ser Val Glu Pro Ala Ala
    50                  55                  60
Ala Ala Ala Ala Gly Val Gly Ala Gly Ala Gly Ala Ala Ser Ala Arg
65                  70                  75                  80
Gly Glu Leu Thr Gly Gly Pro Ser Ser Ser Ser Ser Arg Ser Arg Ser
                85                  90                  95
Pro Ser Ile Arg Arg Ser Ser Ser His Arg Leu Leu Gln Phe Ser Gln
            100                 105                 110
Glu Leu Lys Ala Glu Ala Met Ala Arg Ala Arg Gln Phe Ser Gln Asp
            115                 120                 125
Leu Thr Lys Arg Phe Gly Arg Ser His Ser Arg Ser Glu Ala Gln Ala
    130                 135                 140
Pro Ser Gly Leu Glu Ser Ala Leu Ala Ala Arg Ala Ala Arg Arg Gln
145                 150                 155                 160
Arg Ala Gln Leu Asp Arg Thr Arg Ser Gly Ala His Lys Ala Leu Arg
                165                 170                 175
Gly Leu Arg Phe Ile Ser Ser Asn Lys Ala Asn Asn Ala Trp Met Glu
                180                 185                 190
Val Gln Ala Asn Phe Asp Arg Leu Ala Arg Asp Gly Tyr Leu Ser Arg
            195                 200                 205
Ser Asp Phe Ala Glu Cys Ile Gly Met Thr Glu Ser Lys Glu Phe Ala
    210                 215                 220
Leu Glu Leu Phe Asp Thr Leu Ser Arg Arg Arg Gln Met Lys Val Asp
225                 230                 235                 240
Thr Ile Asn Lys Asp Glu Leu Arg Glu Ile Trp Gln Gln Ile Thr Asp
                245                 250                 255
Asn Ser Phe Asp Ser Arg Leu Gln Ile Phe Phe Glu Met Val Asp Lys
                260                 265                 270
Asn Ala Asp Gly Arg Ile Thr Glu Ala Glu Val Lys Glu Ile Ile Met
```

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                275                        280                        285
Leu Ser Ala Ser Ala Asn Lys Leu Ser Arg Leu Lys Glu Gln Ala Glu
    290                    295                    300
Glu Tyr Ala Ala Leu Ile Met Glu Glu Leu Asp Pro Glu Gly Leu Gly
305                        310                    315                    320
Tyr Ile Glu Leu Trp Gln Leu Glu Thr Leu Leu Leu Gln Lys Asp Thr
                325                        330                    335
Tyr Met Asn Tyr Ser Gln Ala Leu Ser Tyr Thr Ser Gln Ala Leu Ser
            340                    345                    350
Gln Asn Leu Ala Gly Leu Arg Lys Lys Ser Ser Ile Arg Lys Ile Ser
            355                    360                    365
Thr Ser Leu Ser Tyr Tyr Phe Glu Asp Asn Trp Lys Arg Leu Trp Val
    370                    375                    380
Leu Ala Leu Trp Ile Gly Ile Met Ala Gly Leu Phe Thr Trp Lys Phe
385                        390                    395                    400
Met Gln Tyr Arg Asn Arg Tyr Val Phe Asp Val Met Gly Tyr Cys Val
                405                        410                    415
Thr Thr Ala Lys Gly Ala Ala Glu Thr Leu Lys Leu Asn Met Ala Ile
            420                    425                    430
Ile Leu Leu Pro Val Cys Arg Asn Thr Ile Thr Trp Leu Arg Ser Thr
            435                    440                    445
Arg Ala Ala Arg Ala Leu Pro Phe Asp Asp Asn Ile Asn Phe His Lys
    450                    455                    460
Thr Ile Ala Ala Ala Ile Val Val Gly Ile Ile Leu His Ala Gly Asn
465                        470                    475                    480
His Leu Val Cys Asp Phe Pro Arg Leu Ile Lys Ser Ser Asp Glu Lys
                485                        490                    495
Tyr Ala Pro Leu Gly Gln Tyr Phe Gly Glu Ile Lys Pro Thr Tyr Phe
            500                    505                    510
Thr Leu Val Lys Gly Val Glu Gly Ile Thr Gly Val Ile Met Val Val
            515                    520                    525
Cys Met Ile Ile Ala Phe Thr Leu Ala Thr Arg Trp Phe Arg Arg Ser
    530                    535                    540
Leu Val Lys Leu Pro Arg Pro Phe Asp Lys Leu Thr Gly Phe Asn Ala
545                        550                    555                    560
Phe Trp Tyr Ser His His Leu Phe Ile Ile Val Tyr Ile Ala Leu Ile
                565                        570                    575
Val His Gly Glu Cys Leu Tyr Leu Ile His Val Trp Tyr Arg Arg Thr
            580                    585                    590
Thr Trp Met Tyr Leu Ser Val Pro Val Cys Leu Tyr Val Gly Glu Arg
            595                    600                    605
Ile Leu Arg Phe Phe Arg Ser Gly Ser Tyr Ser Val Arg Leu Leu Lys
    610                    615                    620
Val Ala Ile Tyr Pro Gly Asn Val Leu Thr Leu Gln Met Ser Lys Pro
625                        630                    635                    640
Pro Thr Phe Arg Tyr Lys Ser Gly Gln Tyr Met Phe Val Gln Cys Pro
                645                        650                    655
Ala Val Ser Pro Phe Glu Trp His Pro Phe Ser Ile Thr Ser Ala Pro
            660                    665                    670
Gly Asp Asp Tyr Leu Ser Ile His Val Arg Gln Leu Gly Asp Trp Thr
            675                    680                    685
Arg Glu Leu Lys Arg Val Phe Ala Ala Ala Cys Glu Pro Pro Ala Gly
    690                    695                    700
Gly Lys Ser Gly Leu Leu Arg Ala Asp Glu Thr Thr Lys Lys Ile Leu
705                        710                    715                    720
Pro Lys Leu Leu Ile Asp Gly Pro Tyr Gly Ser Pro Ala Gln Asp Tyr
                725                        730                    735
Ser Lys Tyr Asp Val Leu Leu Leu Val Gly Leu Gly Ile Gly Ala Thr
            740                    745                    750
Pro Phe Ile Ser Ile Leu Lys Asp Leu Leu Asn Asn Ile Ile Lys Met
            755                    760                    765
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```
Glu Glu Glu Glu Asp Ala Ser Thr Asp Leu Tyr Pro Pro Met Gly Arg
    770             775             780
Asn Lys Pro His Val Asp Leu Gly Thr Leu Met Thr Ile Thr Ser Arg
785             790             795             800
Pro Lys Lys Ile Leu Lys Thr Thr Asn Ala Tyr Phe Tyr Trp Val Thr
            805             810             815
Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Val Met Asn Glu Ile
        820             825             830
Ala Asp Leu Asp Gln Arg Asn Ile Ile Glu Met His Asn Tyr Leu Thr
        835             840             845
Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile Thr Met Leu
        850             855             860
Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Thr
865             870             875             880
Lys Val Arg Thr His Phe Ala Arg Pro Asn Trp Arg Lys Val Leu Ser
            885             890             895
Lys Ile Ser Ser Lys His Pro Tyr Ala Lys Ile Gly Val Phe Tyr Cys
        900             905             910
Gly Ala Pro Val Leu Ala Gln Glu Leu Ser Lys Leu Cys His Glu Phe
        915             920             925
Asn Gly Lys Cys Thr Thr Lys Phe Glu Phe His Lys Glu His Phe
    930             935             940
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<210> 5
<211> 2889
<212> DNA
<213> Nicotiana tabacum

<220>
<221> CDS
<222> (1)..(2886)
<223> coding for NADPH oxidase

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Met Arg Gly Leu Pro Gly His Glu Arg Arg Trp Thr Ser Asp Thr Val
  1               5              10              15
tct tcc gac aag gat ttt agt ggt gaa tta tcg ccg gga gct gat tcc    96
Ser Ser Asp Lys Asp Phe Ser Gly Glu Leu Ser Pro Gly Ala Asp Ser
            20              25              30
ggc tat aat tcc ggt ttt gct tcc gag gag ttt gtt gaa gtc acg ctt   144
Gly Tyr Asn Ser Gly Phe Ala Ser Glu Glu Phe Val Glu Val Thr Leu
        35              40              45
gat ctt cag gat gat gat acc att att cta cgg agc gtt gaa ccg gct   192
Asp Leu Gln Asp Asp Asp Thr Ile Ile Leu Arg Ser Val Glu Pro Ala
    50              55              60
act gtg att aac att gac gct cct gat ctt ccc gcc gga gtc ggt att   240
Thr Val Ile Asn Ile Asp Ala Pro Asp Leu Pro Ala Gly Val Gly Ile
 65              70              75              80
tcc gga gtt tca att gaa act ccg acg tca gca tcg gtg tcg gaa tct   288
Ser Gly Val Ser Ile Glu Thr Pro Thr Ser Ala Ser Val Ser Glu Ser
            85              90              95
cga tcg ccg acg atc cgc cgg agt tca tct agt aaa ctt cgt cag ttt   336
Arg Ser Pro Thr Ile Arg Arg Ser Ser Ser Ser Lys Leu Arg Gln Phe
        100             105             110
tca cag gag ttg aaa gct gag gcg gtt gcg aaa gcg agg cag ttt tca   384
Ser Gln Glu Leu Lys Ala Glu Ala Val Ala Lys Ala Arg Gln Phe Ser
        115             120             125
caa gag ctg aag gcg gag tta agg aga ttc tca tgg agc cat ggg cat   432
Gln Glu Leu Lys Ala Glu Leu Arg Arg Phe Ser Trp Ser His Gly His
    130             135             140
```

```
gcg tct cgc gcg ttt tcg ccc tcg tcg ttt ttt caa aac gcc gtc gtt    480
Ala Ser Arg Ala Phe Ser Pro Ser Ser Phe Phe Gln Asn Ala Val Val
145                 150                 155                 160
gga aca ggt aac ggc gtg gac tcg gct tta gcg gca cgt gca tta cgt    528
Gly Thr Gly Asn Gly Val Asp Ser Ala Leu Ala Ala Arg Ala Leu Arg
                165                 170                 175
cgg caa cgc gcg cag ctt gat cgg act cgt tcc agc gcc cat aga gct    576
Arg Gln Arg Ala Gln Leu Asp Arg Thr Arg Ser Ser Ala His Arg Ala
            180                 185                 190
ctt cgt aga ctc aaa ttc att agc aat aac aaa acc aat gga tgg aat    624
Leu Arg Arg Leu Lys Phe Ile Ser Asn Asn Lys Thr Asn Gly Trp Asn
        195                 200                 205
gaa gtt gaa aac aat ttc tca aag ctc gct aaa gac ggt tat ctt tac    672
Glu Val Glu Asn Asn Phe Ser Lys Leu Ala Lys Asp Gly Tyr Leu Tyr
    210                 215                 220
cgt tcc gat ttc gca caa tgc ata ggt atg aag gat tcg aag gaa ttt    720
Arg Ser Asp Phe Ala Gln Cys Ile Gly Met Lys Asp Ser Lys Glu Phe
225                 230                 235                 240
gca ttg gaa tta ttt gat gct ttg agt aga aga aga aga tta aag gtt    768
Ala Leu Glu Leu Phe Asp Ala Leu Ser Arg Arg Arg Arg Leu Lys Val
                245                 250                 255
gat aaa att agc aag gag gaa ttg tat gag tac tgg tct caa atc acc    816
Asp Lys Ile Ser Lys Glu Glu Leu Tyr Glu Tyr Trp Ser Gln Ile Thr
            260                 265                 270
gat cag agt ttc gat tct cgg ctt cag atc tcc ttc gac atg gtg gac    864
Asp Gln Ser Phe Asp Ser Arg Leu Gln Ile Ser Phe Asp Met Val Asp
        275                 280                 285
aag aat gaa gat ggt cga att gct gaa gag gaa gta aaa gag atc atc    912
Lys Asn Glu Asp Gly Arg Ile Ala Glu Glu Glu Val Lys Glu Ile Ile
    290                 295                 300
atg cta agt gca tct gca aac aag tta tca aga tta aaa gaa caa gca    960
Met Leu Ser Ala Ser Ala Asn Lys Leu Ser Arg Leu Lys Glu Gln Ala
305                 310                 315                 320
gag gag tat gca gct tta atc atg gaa gaa tta gat cct gaa aga ctc   1008
Glu Glu Tyr Ala Ala Leu Ile Met Glu Glu Leu Asp Pro Glu Arg Leu
                325                 330                 335
ggc tac att gag cta tgg cag ctg gaa aca ctt ctc ctc caa aag gac   1056
Gly Tyr Ile Glu Leu Trp Gln Leu Glu Thr Leu Leu Leu Gln Lys Asp
            340                 345                 350
act tac ctc aac tac agt caa gca cta agt tac acg agc caa gcc ttg   1104
Thr Tyr Leu Asn Tyr Ser Gln Ala Leu Ser Tyr Thr Ser Gln Ala Leu
        355                 360                 365
agc caa aac ctt cac gga tta agg aag aaa agc cca ata aaa aga atg   1152
Ser Gln Asn Leu His Gly Leu Arg Lys Lys Ser Pro Ile Lys Arg Met
    370                 375                 380
agc aca aaa ctt gtc tat tca ttg caa gaa aac tgg aag aga att tgg   1200
Ser Thr Lys Leu Val Tyr Ser Leu Gln Glu Asn Trp Lys Arg Ile Trp
385                 390                 395                 400
gtt ctc act tta tgg att ttg ata atg att ggg ctt ttt ctt tgg aag   1248
Val Leu Thr Leu Trp Ile Leu Ile Met Ile Gly Leu Phe Leu Trp Lys
                405                 410                 415
ttc tat cag tac aaa aac aag agt gca ttc cgt gtc atg ggt tat tgc   1296
Phe Tyr Gln Tyr Lys Asn Lys Ser Ala Phe Arg Val Met Gly Tyr Cys
            420                 425                 430
ctt gtc acg gct aag ggc gct gct gag act ctc aag ttc aac atg gct   1344
Leu Val Thr Ala Lys Gly Ala Ala Glu Thr Leu Lys Phe Asn Met Ala
        435                 440                 445
ctt ata tta ttg cca gta tgc aga aac act att aca tgg ctc agg tcc   1392
Leu Ile Leu Leu Pro Val Cys Arg Asn Thr Ile Thr Trp Leu Arg Ser
    450                 455                 460
acc aag ttg agc cat ttt gta ccc ttt gac gac aac atc aac ttt cac   1440
Thr Lys Leu Ser His Phe Val Pro Phe Asp Asp Asn Ile Asn Phe His
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Thr Lys Leu Ser His Phe Val Pro Phe Asp Asp Asn Ile Asn Phe His
465             470             475             480
aag act gtc gct gca gcc att gtc act ggt atc ata ctc cat gct ggt    1488
Lys Thr Val Ala Ala Ala Ile Val Thr Gly Ile Ile Leu His Ala Gly
                485             490             495
aac cat ctt gta tgt gat ttc cca agg ctt ata cat gca gat gat caa    1536
Asn His Leu Val Cys Asp Phe Pro Arg Leu Ile His Ala Asp Asp Gln
                500             505             510
gat tat caa agt ttt ttg tcg aat gat ttt ggc caa agt aag cct gga    1584
Asp Tyr Gln Ser Phe Leu Ser Asn Asp Phe Gly Gln Ser Lys Pro Gly
            515             520             525
tac ata gac ctt gtt aaa gga gtt gag ggt gtg acg gga ata ata atg    1632
Tyr Ile Asp Leu Val Lys Gly Val Glu Gly Val Thr Gly Ile Ile Met
        530             535             540
gta atc ctt atg gcc att gct ttc act ctt gct aca cga tgg ttt aga    1680
Val Ile Leu Met Ala Ile Ala Phe Thr Leu Ala Thr Arg Trp Phe Arg
545             550             555             560
cgg agc ctc att aag ttg ccc aaa cct ttt gat aga ctc act ggc ttc    1728
Arg Ser Leu Ile Lys Leu Pro Lys Pro Phe Asp Arg Leu Thr Gly Phe
                565             570             575
aat gca ttc tgg tat tca cac cac ctt ctt gtc att gtc tac atc cta    1776
Asn Ala Phe Trp Tyr Ser His His Leu Leu Val Ile Val Tyr Ile Leu
                580             585             590
ctg atc atc cat ggc acg ttc ctc ttc ctt gtg cat aaa tgg tac tcc    1824
Leu Ile Ile His Gly Thr Phe Leu Phe Leu Val His Lys Trp Tyr Ser
            595             600             605
aag acg acg tgg atg tat cta gca gtt cct gtg ctt ctc tac gca ggg    1872
Lys Thr Thr Trp Met Tyr Leu Ala Val Pro Val Leu Leu Tyr Ala Gly
        610             615             620
gaa aga act ctt aga ttc ttc cgg tca ggc ttg tac act gtc cgg ctt    1920
Glu Arg Thr Leu Arg Phe Phe Arg Ser Gly Leu Tyr Thr Val Arg Leu
625             630             635             640
ctg aaa gta gca ata tat cct gga aat gtc ctc act cta caa atg tct    1968
Leu Lys Val Ala Ile Tyr Pro Gly Asn Val Leu Thr Leu Gln Met Ser
            645             650             655
aag cct cct caa ttt cga tac aaa agt gga caa tat atg ttt gtc cag    2016
Lys Pro Pro Gln Phe Arg Tyr Lys Ser Gly Gln Tyr Met Phe Val Gln
            660             665             670
tgt cca gct gtt tct cca ttc gag tgg cat cca ttt tcc att act tca    2064
Cys Pro Ala Val Ser Pro Phe Glu Trp His Pro Phe Ser Ile Thr Ser
        675             680             685
gct cct ggg gat gac tac ttg agc att cac atc cgg caa ctt ggt gac    2112
Ala Pro Gly Asp Asp Tyr Leu Ser Ile His Ile Arg Gln Leu Gly Asp
    690             695             700
tgg act caa gaa ctc aag cgg gtc ttt tct gag gct tgc gag cgg cca    2160
Trp Thr Gln Glu Leu Lys Arg Val Phe Ser Glu Ala Cys Glu Arg Pro
705             710             715             720
gag gct gga aag agt ggc ctg ctc aga gct gac gaa aac act aag aaa    2208
Glu Ala Gly Lys Ser Gly Leu Leu Arg Ala Asp Glu Asn Thr Lys Lys
            725             730             735
agt ttg cca aag cta tta ata gat gga cct tac gga gct cca gca caa    2256
Ser Leu Pro Lys Leu Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln
            740             745             750
gat tac cga aaa tat gat gtc ttg ctg ctt gtt ggt ctt ggc att gga    2304
Asp Tyr Arg Lys Tyr Asp Val Leu Leu Leu Val Gly Leu Gly Ile Gly
            755             760             765
gca acg ccg ttc ata agt atc ctg aaa gac ttg ctc gtt aac atc gtg    2352
Ala Thr Pro Phe Ile Ser Ile Leu Lys Asp Leu Leu Val Asn Ile Val
    770             775             780
aaa atg gag gag caa gca gat tta gcc tca gat ttc agt ggg aac tca    2400
Lys Met Glu Glu Gln Ala Asp Leu Ala Ser Asp Phe Ser Gly Asn Ser
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     785                      790                      795                      800
gac atg agc gtt gcg aca agt gaa caa cca gct ctc aac aag att tct    2448
Asp Met Ser Val Ala Thr Ser Glu Gln Pro Ala Leu Asn Lys Ile Ser
                            805                      810                      815
ctg aaa agg aga aag agc act cta aga acc aca aat gca tat ttt tat    2496
Leu Lys Arg Arg Lys Ser Thr Leu Arg Thr Thr Asn Ala Tyr Phe Tyr
                820                      825                      830
tgg gtg acc cgg gag caa gga tca ttt gat tgg ttc aaa ggc gtt atg    2544
Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Val Met
            835                      840                      845
aac gaa gtg gct gaa ctt gat caa agg ggg gtc atc gag atg cat aac    2592
Asn Glu Val Ala Glu Leu Asp Gln Arg Gly Val Ile Glu Met His Asn
        850                      855                      860
tac ttg acg agt gtt tat gag gaa ggg gat gct cgt tca gct ctc att    2640
Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile
865                      870                      875                      880
acc atg gtc cag gca ctt aac cat gct aag aat ggg gtt gat att gta    2688
Thr Met Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile Val
                    885                      890                      895
tca ggc acc agg gtg agg aca cat ttt gct agg cca aat tgg aag aaa    2736
Ser Gly Thr Arg Val Arg Thr His Phe Ala Arg Pro Asn Trp Lys Lys
                900                      905                      910
gta ttt tcc aag acc tta acc aag cat gca aat gca aga ata ggg gtt    2784
Val Phe Ser Lys Thr Leu Thr Lys His Ala Asn Ala Arg Ile Gly Val
            915                      920                      925
ttc tac tgt ggt gca ccc gta tta gca aaa gaa ctc agc aaa ctc tgc    2832
Phe Tyr Cys Gly Ala Pro Val Leu Ala Lys Glu Leu Ser Lys Leu Cys
        930                      935                      940
aaa gag tat aat caa aag ggt gca aca aag ttc gag ttt cac aaa gaa    2880
Lys Glu Tyr Asn Gln Lys Gly Ala Thr Lys Phe Glu Phe His Lys Glu
945                      950                      955                      960
cat ttt tag                                                         2889
His Phe
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<210> 6
<211> 962
<212> PRT
<213> Nicotiana tabacum

<400> 6

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1               5                   10                  15
Ser Ser Asp Lys Asp Phe Ser Gly Glu Leu Ser Pro Gly Ala Asp Ser
                20                  25                  30
Gly Tyr Asn Ser Gly Phe Ala Ser Glu Glu Phe Val Glu Val Thr Leu
            35                  40                  45
Asp Leu Gln Asp Asp Asp Thr Ile Ile Leu Arg Ser Val Glu Pro Ala
        50                  55                  60
Thr Val Ile Asn Ile Asp Ala Pro Asp Leu Pro Ala Gly Val Gly Ile
65                  70                  75                  80
Ser Gly Val Ser Ile Glu Thr Pro Thr Ser Ala Ser Val Ser Glu Ser
                85                  90                  95
Arg Ser Pro Thr Ile Arg Arg Ser Ser Ser Ser Lys Leu Arg Gln Phe
            100                 105                 110
Ser Gln Glu Leu Lys Ala Glu Ala Val Ala Lys Ala Arg Gln Phe Ser
        115                 120                 125
Gln Glu Leu Lys Ala Glu Leu Arg Arg Phe Ser Trp Ser His Gly His
    130                 135                 140
Ala Ser Arg Ala Phe Ser Pro Ser Ser Phe Phe Gln Asn Ala Val Val
145                 150                 155                 160
Gly Thr Gly Asn Gly Val Asp Ser Ala Leu Ala Ala Arg Ala Leu Arg
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                    165                     170                     175
Arg Gln Arg Ala Gln Leu Asp Arg Thr Arg Ser Ser Ala His Arg Ala
            180                     185                 190
Leu Arg Arg Leu Lys Phe Ile Ser Asn Asn Lys Thr Asn Gly Trp Asn
            195                     200                 205
Glu Val Glu Asn Asn Phe Ser Lys Leu Ala Lys Asp Gly Tyr Leu Tyr
            210                     215                 220
Arg Ser Asp Phe Ala Gln Cys Ile Gly Met Lys Asp Ser Lys Glu Phe
225                     230                 235                 240
Ala Leu Glu Leu Phe Asp Ala Leu Ser Arg Arg Arg Arg Leu Lys Val
                245                     250                 255
Asp Lys Ile Ser Lys Glu Glu Leu Tyr Glu Tyr Trp Ser Gln Ile Thr
                260                     265                 270
Asp Gln Ser Phe Asp Ser Arg Leu Gln Ile Ser Phe Asp Met Val Asp
            275                     280                 285
Lys Asn Glu Asp Gly Arg Ile Ala Glu Glu Glu Val Lys Glu Ile Ile
    290                     295                 300
Met Leu Ser Ala Ser Ala Asn Lys Leu Ser Arg Leu Lys Glu Gln Ala
305                     310                 315                 320
Glu Glu Tyr Ala Ala Leu Ile Met Glu Glu Leu Asp Pro Glu Arg Leu
                325                     330                 335
Gly Tyr Ile Glu Leu Trp Gln Leu Glu Thr Leu Leu Leu Gln Lys Asp
                340                     345                 350
Thr Tyr Leu Asn Tyr Ser Gln Ala Leu Ser Tyr Thr Ser Gln Ala Leu
            355                     360                 365
Ser Gln Asn Leu His Gly Leu Arg Lys Lys Ser Pro Ile Lys Arg Met
    370                     375                 380
Ser Thr Lys Leu Val Tyr Ser Leu Gln Glu Asn Trp Lys Arg Ile Trp
385                     390                 395                 400
Val Leu Thr Leu Trp Ile Leu Ile Met Ile Gly Leu Phe Leu Trp Lys
                405                     410                 415
Phe Tyr Gln Tyr Lys Asn Lys Ser Ala Phe Arg Val Met Gly Tyr Cys
            420                     425                 430
Leu Val Thr Ala Lys Gly Ala Ala Glu Thr Leu Lys Phe Asn Met Ala
            435                     440                 445
Leu Ile Leu Leu Pro Val Cys Arg Asn Thr Ile Thr Trp Leu Arg Ser
    450                     455                 460
Thr Lys Leu Ser His Phe Val Pro Phe Asp Asp Asn Ile Asn Phe His
465                     470                 475                 480
Lys Thr Val Ala Ala Ala Ile Val Thr Gly Ile Ile Leu His Ala Gly
                485                     490                 495
Asn His Leu Val Cys Asp Phe Pro Arg Leu Ile His Ala Asp Asp Gln
            500                     505                 510
Asp Tyr Gln Ser Phe Leu Ser Asn Asp Phe Gly Gln Ser Lys Pro Gly
            515                     520                 525
Tyr Ile Asp Leu Val Lys Gly Val Glu Gly Val Thr Gly Ile Ile Met
    530                     535                 540
Val Ile Leu Met Ala Ile Ala Phe Thr Leu Ala Thr Arg Trp Phe Arg
545                     550                 555                 560
Arg Ser Leu Ile Lys Leu Pro Lys Pro Phe Asp Arg Leu Thr Gly Phe
                565                     570                 575
Asn Ala Phe Trp Tyr Ser His His Leu Leu Val Ile Val Tyr Ile Leu
            580                     585                 590
Leu Ile Ile His Gly Thr Phe Leu Phe Leu Val His Lys Trp Tyr Ser
    595                     600                 605
Lys Thr Thr Trp Met Tyr Leu Ala Val Pro Val Leu Leu Tyr Ala Gly
    610                     615                 620
Glu Arg Thr Leu Arg Phe Phe Arg Ser Gly Leu Tyr Thr Val Arg Leu
625                     630                 635                 640
Leu Lys Val Ala Ile Tyr Pro Gly Asn Val Leu Thr Leu Gln Met Ser
                645                     650                 655
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Lys Pro Pro Gln Phe Arg Tyr Lys Ser Gly Gln Tyr Met Phe Val Gln
        660                 665             670
Cys Pro Ala Val Ser Pro Phe Glu Trp His Pro Phe Ser Ile Thr Ser
        675             680             685
Ala Pro Gly Asp Asp Tyr Leu Ser Ile His Ile Arg Gln Leu Gly Asp
        690             695             700
Trp Thr Gln Glu Leu Lys Arg Val Phe Ser Glu Ala Cys Glu Arg Pro
705             710             715             720
Glu Ala Gly Lys Ser Gly Leu Leu Arg Ala Asp Glu Asn Thr Lys Lys
            725             730             735
Ser Leu Pro Lys Leu Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln
        740             745             750
Asp Tyr Arg Lys Tyr Asp Val Leu Leu Leu Val Gly Leu Gly Ile Gly
        755             760             765
Ala Thr Pro Phe Ile Ser Ile Leu Lys Asp Leu Leu Val Asn Ile Val
770             775             780
Lys Met Glu Glu Gln Ala Asp Leu Ala Ser Asp Phe Ser Gly Asn Ser
785             790             795             800
Asp Met Ser Val Ala Thr Ser Glu Gln Pro Ala Leu Asn Lys Ile Ser
            805             810             815
Leu Lys Arg Arg Lys Ser Thr Leu Arg Thr Thr Asn Ala Tyr Phe Tyr
        820             825             830
Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Val Met
        835             840             845
Asn Glu Val Ala Glu Leu Asp Gln Arg Gly Val Ile Glu Met His Asn
    850             855             860
Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile
865             870             875             880
Thr Met Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile Val
            885             890             895
Ser Gly Thr Arg Val Arg Thr His Phe Ala Arg Pro Asn Trp Lys Lys
        900             905             910
Val Phe Ser Lys Thr Leu Thr Lys His Ala Asn Ala Arg Ile Gly Val
        915             920             925
Phe Tyr Cys Gly Ala Pro Val Leu Ala Lys Glu Leu Ser Lys Leu Cys
        930             935             940
Lys Glu Tyr Asn Gln Lys Gly Ala Thr Lys Phe Glu Phe His Lys Glu
945             950             955             960
His Phe
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<210> 7
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<212> DNA
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<220>
<221> CDS
<222> (92)..(2980)
<223> coding for NADPH oxidase

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tatttatttta ttgtgctttg atttgggaca a atg agg ggt tta cct ggg cat    112
                                    Met Arg Gly Leu Pro Gly His
                                      1               5
gaa cgc cgg tgg acg tcg gat acg gta tct tcc ggc aag gat tta agt   160
Glu Arg Arg Trp Thr Ser Asp Thr Val Ser Ser Gly Lys Asp Leu Ser
         10              15                  20
ggt gag tca tcg ccg gga act gat tcc ggg aat att tcc ggt ttt gct   208
Gly Glu Ser Ser Pro Gly Thr Asp Ser Gly Asn Ile Ser Gly Phe Ala
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          25                        30                        35
tcc gag gag ttt gtt gaa gtt ata ctt gat ctt cag gat gat gat acg    256
Ser Glu Glu Phe Val Glu Val Ile Leu Asp Leu Gln Asp Asp Asp Thr
 40                       45                        50                        55
att att cta cgg agc gtt gaa ccg gct act gta atc aac att gat gct    304
Ile Ile Leu Arg Ser Val Glu Pro Ala Thr Val Ile Asn Ile Asp Ala
                     60                        65                        70
tct gat cct gct acc gga gtc ggt att ggt gga gta tcg att gaa act    352
Ser Asp Pro Ala Thr Gly Val Gly Ile Gly Gly Val Ser Ile Glu Thr
                 75                        80                        85
ccg gcg tcg ctg act tcg acg tcg gga act cga tcg ccg acg atg cgt    400
Pro Ala Ser Leu Thr Ser Thr Ser Gly Thr Arg Ser Pro Thr Met Arg
                 90                        95                       100
cgg agt aca tcg aat aaa tta cgt cag ttt tca cag gag ttg aaa gct    448
Arg Ser Thr Ser Asn Lys Leu Arg Gln Phe Ser Gln Glu Leu Lys Ala
        105                       110                       115
gag gct gtc gcg aaa gcg aag cat ttc tcg caa gag ctt aaa gcg gag    496
Glu Ala Val Ala Lys Ala Lys His Phe Ser Gln Glu Leu Lys Ala Glu
120                       125                       130                       135
cta agg aga ttc tca tgg agc cat gga cat gcg tct cgc act ttt tcg    544
Leu Arg Arg Phe Ser Trp Ser His Gly His Ala Ser Arg Thr Phe Ser
                     140                       145                       150
ccg gcg tcg ttt ttc caa aac gcc gtc gtc ggt aca ggc aac ggt gta    592
Pro Ala Ser Phe Phe Gln Asn Ala Val Val Gly Thr Gly Asn Gly Val
                 155                       160                       165
gat tcg gct tta gca gct cga gca tta cga cgg cag cgc gct cag ctc    640
Asp Ser Ala Leu Ala Ala Arg Ala Leu Arg Arg Gln Arg Ala Gln Leu
                 170                       175                       180
gat cgg act cgt tcc agc gct cac aag gct ctt cgt gga ctc aaa ttc    688
Asp Arg Thr Arg Ser Ser Ala His Lys Ala Leu Arg Gly Leu Lys Phe
        185                       190                       195
atc agc aat aac aaa act aac gga tgg aat gaa gtt gaa aac aat ttt    736
Ile Ser Asn Asn Lys Thr Asn Gly Trp Asn Glu Val Glu Asn Asn Phe
200                       205                       210                       215
gct aag ctc gct aaa gac ggt tac ctt tat cgc tcc gat ttc gca caa    784
Ala Lys Leu Ala Lys Asp Gly Tyr Leu Tyr Arg Ser Asp Phe Ala Gln
                     220                       225                       230
tgc atc ggt atg aag gat tca aag gaa ttt gca ttg gaa ttg ttt gat    832
Cys Ile Gly Met Lys Asp Ser Lys Glu Phe Ala Leu Glu Leu Phe Asp
                 235                       240                       245
gct ttg agt aga aga aga aga ttg aag gtt gat aag att agc aaa gag    880
Ala Leu Ser Arg Arg Arg Arg Leu Lys Val Asp Lys Ile Ser Lys Glu
                 250                       255                       260
gaa ttg tat gag tat tgg tct caa atc acc gat cag agt ttc gat tct    928
Glu Leu Tyr Glu Tyr Trp Ser Gln Ile Thr Asp Gln Ser Phe Asp Ser
        265                       270                       275
cgg ctt cag atc ttc ttc gac atg gtg gac aag aat gaa gat ggt cga    976
Arg Leu Gln Ile Phe Phe Asp Met Val Asp Lys Asn Glu Asp Gly Arg
280                       285                       290                       295
att ggt gaa gaa gaa gta aaa gag atc atc atg cta agt gcc tct gca   1024
Ile Gly Glu Glu Glu Val Lys Glu Ile Ile Met Leu Ser Ala Ser Ala
                     300                       305                       310
aac aaa tta tca aga tta aaa gaa caa gca gag gag tat gca gct ctg   1072
Asn Lys Leu Ser Arg Leu Lys Glu Gln Ala Glu Glu Tyr Ala Ala Leu
                 315                       320                       325
atc atg gaa gaa tta gat cct gaa aga ctt ggc tac att gag cta tgg   1120
Ile Met Glu Glu Leu Asp Pro Glu Arg Leu Gly Tyr Ile Glu Leu Trp
                 330                       335                       340
cag ctg gaa acg ctt ctc ctc caa aag gac act tac ctc aac tac agt   1168
Gln Leu Glu Thr Leu Leu Leu Gln Lys Asp Thr Tyr Leu Asn Tyr Ser
        345                       350                       355
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caa gca cta agc tac aca agc caa gct ttg agc caa aac ctg caa ggg    1216
Gln Ala Leu Ser Tyr Thr Ser Gln Ala Leu Ser Gln Asn Leu Gln Gly
360             365             370                 375
ttg agg aag aga agc cca ata aga aga atg agc aca aaa ctt gtc tat    1264
Leu Arg Lys Arg Ser Pro Ile Arg Arg Met Ser Thr Lys Leu Val Tyr
                380             385             390
tca ctg caa gag aat tgg aag aga att tgg gtt ctg gtc ttg tgg att    1312
Ser Leu Gln Glu Asn Trp Lys Arg Ile Trp Val Leu Val Leu Trp Ile
            395             400                 405
ttg ata atg att gga ctt ttt ctt tgg aag ttc tat ctg tac aaa cag    1360
Leu Ile Met Ile Gly Leu Phe Leu Trp Lys Phe Tyr Leu Tyr Lys Gln
            410             415             420
aaa agt gca ttt caa gtt atg ggt tat tgc ctt cta aca gct aag ggt    1408
Lys Ser Ala Phe Gln Val Met Gly Tyr Cys Leu Leu Thr Ala Lys Gly
        425             430             435
gct gct gag act cta aag ttc aac atg gct ttg ata ttg ttg cca gtt    1456
Ala Ala Glu Thr Leu Lys Phe Asn Met Ala Leu Ile Leu Leu Pro Val
440             445             450                 455
tgc agg aac acc att aca ttc ctc agg tct act aaa ttg agt tgt ttt    1504
Cys Arg Asn Thr Ile Thr Phe Leu Arg Ser Thr Lys Leu Ser Cys Phe
                460             465             470
gta ccc ttt gat gac aac atc aac ttc cac aag act gtt gct gca gcc    1552
Val Pro Phe Asp Asp Asn Ile Asn Phe His Lys Thr Val Ala Ala Ala
            475             480             485
att gtt act ggt atc ata ctc cat gcc ggt aat cat ctt gta tgt gat    1600
Ile Val Thr Gly Ile Ile Leu His Ala Gly Asn His Leu Val Cys Asp
            490             495             500
ttc cca aag ctt ata cat gca aat aat acg aat tat cag aaa tat ttg    1648
Phe Pro Lys Leu Ile His Ala Asn Asn Thr Asn Tyr Gln Lys Tyr Leu
            505             510             515
gtg aat gat ttt ggc cca agc cag cct cag tac ata gat ctt gtt aaa    1696
Val Asn Asp Phe Gly Pro Ser Gln Pro Gln Tyr Ile Asp Leu Val Lys
520             525             530                 535
gga gtg gag ggt gtg aca gga ata ata atg gta atc ctc atg gcc att    1744
Gly Val Glu Gly Val Thr Gly Ile Ile Met Val Ile Leu Met Ala Ile
                540             545             550
gct ttc act ctt gca acg cga tgg ttt agg cgg agc ctc att aag ttt    1792
Ala Phe Thr Leu Ala Thr Arg Trp Phe Arg Arg Ser Leu Ile Lys Phe
                555             560             565
ccc aaa cct ttt gat aga ctc act ggt ttc aat gcg ttc tgg tac tcg    1840
Pro Lys Pro Phe Asp Arg Leu Thr Gly Phe Asn Ala Phe Trp Tyr Ser
            570             575             580
cac cac ctt ctc atc att gtc tac atc gta ctg atc atc cat ggc aca    1888
His His Leu Leu Ile Ile Val Tyr Ile Val Leu Ile Ile His Gly Thr
            585             590             595
ttc ctc tac ctt gtg cat aac tgg tac tcc aaa acg aca tgg atg tat    1936
Phe Leu Tyr Leu Val His Asn Trp Tyr Ser Lys Thr Thr Trp Met Tyr
600             605             610                 615
cta gca gtt cct gta ctt ctc tac gca ggg gaa aga act ctt aga ttc    1984
Leu Ala Val Pro Val Leu Leu Tyr Ala Gly Glu Arg Thr Leu Arg Phe
                620             625             630
ttc cga tca ggc tta tat aca gtc cgg ctt cta aaa gta gca ata tat    2032
Phe Arg Ser Gly Leu Tyr Thr Val Arg Leu Leu Lys Val Ala Ile Tyr
            635             640             645
cct gga aat gtc ctt act ctg caa atg tct aag cct ccg caa ttt cga    2080
Pro Gly Asn Val Leu Thr Leu Gln Met Ser Lys Pro Pro Gln Phe Arg
            650             655             660
tac aag agt gga caa tat atg ttt gtc cag tgt cca gct gtt tct cca    2128
Tyr Lys Ser Gly Gln Tyr Met Phe Val Gln Cys Pro Ala Val Ser Pro
            665             670             675
ttc gag tgg cat cca ttt tcc att act tca gct cct ggg gat gac tac    2176
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Phe Glu Trp His Pro Phe Ser Ile Thr Ser Ala Pro Gly Asp Asp Tyr
680             685             690                 695
ttg agc att cat atc cga caa ctt ggt gac tgg act caa gaa ctc aag    2224
Leu Ser Ile His Ile Arg Gln Leu Gly Asp Trp Thr Gln Glu Leu Lys
                700             705             710
cgg gtg ttt tcc gag gct tgc gag cag cca gag gct gga aag agt ggc    2272
Arg Val Phe Ser Glu Ala Cys Glu Gln Pro Glu Ala Gly Lys Ser Gly
                715             720             725
ctg ctc aga gct gac gaa aac acc aaa aca agt ttg cca aag cta ttg    2320
Leu Leu Arg Ala Asp Glu Asn Thr Lys Thr Ser Leu Pro Lys Leu Leu
            730             735             740
ata gat gga cct tat gga gct cca gca caa gat tac cga aag tat gat    2368
Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln Asp Tyr Arg Lys Tyr Asp
            745             750             755
gtc tta ctg ctt gtt ggt ctt ggc att gga gca act ccc ttt ata agt    2416
Val Leu Leu Leu Val Gly Leu Gly Ile Gly Ala Thr Pro Phe Ile Ser
760             765             770             775
atc ctg aaa gac ttg ctc aaa aac atc gtc aca atg gag gag caa gca    2464
Ile Leu Lys Asp Leu Leu Lys Asn Ile Val Thr Met Glu Glu Gln Ala
                780             785             790
gat tta gtc tcg gat ttt tca ggg aac tca gac atg agc gct gca aca    2512
Asp Leu Val Ser Asp Phe Ser Gly Asn Ser Asp Met Ser Ala Ala Thr
                795             800             805
agt gaa caa cca gct ctc aac aag att tct cca aaa aag aga aag agt    2560
Ser Glu Gln Pro Ala Leu Asn Lys Ile Ser Pro Lys Lys Arg Lys Ser
            810             815             820
act cta aaa acc aca aat gca tat ttt tat tgg gtg acc cgg gag caa    2608
Thr Leu Lys Thr Thr Asn Ala Tyr Phe Tyr Trp Val Thr Arg Glu Gln
    825             830             835
gga tca ttt gat tgg ttc aaa ggt gtt atg aac gaa gtg gct gaa ctt    2656
Gly Ser Phe Asp Trp Phe Lys Gly Val Met Asn Glu Val Ala Glu Leu
840             845             850                 855
gat caa agg ggg gtc atc gag atg cat aac tac tta acg agt gtt tat    2704
Asp Gln Arg Gly Val Ile Glu Met His Asn Tyr Leu Thr Ser Val Tyr
                860             865             870
gag gaa ggg gat gca cgt tca gct ctc att acc atg gtc cag gcg ctt    2752
Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile Thr Met Val Gln Ala Leu
            875             880             885
aac cat gct aag aat ggg gtt gat att gta tca ggc acc agt gtg agg    2800
Asn His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Thr Ser Val Arg
            890             895             900
aca cat ttt gcc aga ccg aat tgg agg aaa gta ttt tcc aag acc tta    2848
Thr His Phe Ala Arg Pro Asn Trp Arg Lys Val Phe Ser Lys Thr Leu
    905             910             915
acc aag cat gca aat gca aga ata gga gtt ttc tac tgc ggt gca ccc    2896
Thr Lys His Ala Asn Ala Arg Ile Gly Val Phe Tyr Cys Gly Ala Pro
920             925             930                 935
ata tta gct aaa gaa ctc agc aaa ctc tgc aaa gag ttt aac caa aag    2944
Ile Leu Ala Lys Glu Leu Ser Lys Leu Cys Lys Glu Phe Asn Gln Lys
            940             945                 950
ggc aca acg aag ttc gag ttt cac aaa gaa cat ttt tagaaggccc        2990
Gly Thr Thr Lys Phe Glu Phe His Lys Glu His Phe
            955             960
tggagtacaa ttaatcttgc atcaacggta cacacatcgg taaaccagta tttaccacat 3050
ctatctttgg tacctgattt gatgattcta ctgaagacat aacattagta aggaataagt 3110
cagagacaaa ttgtacataa taggaggaag cacatttaca gagaaaatac ataccaatat 3170
gatatgtgta taggttttgt atattcagtc atctgttatc acataccaaa cttcagaact 3230
ccaaaaggga gactctgctt tggtctgatg cttagaata tgggagggaa aaaaagacga 3290
caattgaatg gtcacgatac acatgaagaa tgagaatatt gggaaacagc taataagaag 3350
ttgaccttct tgataaagaa acactatgaa aatggcaagc atgaaaggac agacaatcat 3410
ggcttggatg gggaaaacaa aatacaattt tgaaagaaga agataatatt agtaggagta 3470
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gtgggggact gatagctttg ttggtggaac ttataatggg gctaagggaa tccttccaaa 3530
aaatgtctat gtagtaacta cttttttcttt tgctttgtga gtattttttg gggtattttta 3590
atatactact tattagataa gaggatagaa aatacgtgta tatgcaattc ttattagtaa 3650
agtttatctg tagtagttct ttaatctgga gaaaggtact atcaaaggaa atatctcatc 3710
gaaaaaaaaa aaaaaaaaaa aaa                                          3733
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<210> 8
<211> 963
<212> PRT
<213> Solanum tuberosum

<400> 8

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Met Arg Gly Leu Pro Gly His Glu Arg Arg Trp Thr Ser Asp Thr Val
 1               5                   10                  15
Ser Ser Gly Lys Asp Leu Ser Gly Glu Ser Ser Pro Gly Thr Asp Ser
                20                  25                  30
Gly Asn Ile Ser Gly Phe Ala Ser Glu Glu Phe Val Glu Val Ile Leu
            35                  40                  45
Asp Leu Gln Asp Asp Asp Thr Ile Ile Leu Arg Ser Val Glu Pro Ala
        50                  55                  60
Thr Val Ile Asn Ile Asp Ala Ser Asp Pro Ala Thr Gly Val Gly Ile
 65                  70                  75                  80
Gly Gly Val Ser Ile Glu Thr Pro Ala Ser Leu Thr Ser Thr Ser Gly
                85                  90                  95
Thr Arg Ser Pro Thr Met Arg Arg Ser Thr Ser Asn Lys Leu Arg Gln
                100                 105                 110
Phe Ser Gln Glu Leu Lys Ala Glu Ala Val Ala Lys Ala Lys His Phe
            115                 120                 125
Ser Gln Glu Leu Lys Ala Glu Leu Arg Arg Phe Ser Trp Ser His Gly
        130                 135                 140
His Ala Ser Arg Thr Phe Ser Pro Ala Ser Phe Phe Gln Asn Ala Val
145                 150                 155                 160
Val Gly Thr Gly Asn Gly Val Asp Ser Ala Leu Ala Ala Arg Ala Leu
                165                 170                 175
Arg Arg Gln Arg Ala Gln Leu Asp Arg Thr Arg Ser Ser Ala His Lys
                180                 185                 190
Ala Leu Arg Gly Leu Lys Phe Ile Ser Asn Asn Lys Thr Asn Gly Trp
            195                 200                 205
Asn Glu Val Glu Asn Asn Phe Ala Lys Leu Ala Lys Asp Gly Tyr Leu
        210                 215                 220
Tyr Arg Ser Asp Phe Ala Gln Cys Ile Gly Met Lys Asp Ser Lys Glu
225                 230                 235                 240
Phe Ala Leu Glu Leu Phe Asp Ala Leu Ser Arg Arg Arg Arg Leu Lys
                245                 250                 255
Val Asp Lys Ile Ser Lys Glu Glu Leu Tyr Glu Tyr Trp Ser Gln Ile
                260                 265                 270
Thr Asp Gln Ser Phe Asp Ser Arg Leu Gln Ile Phe Phe Asp Met Val
            275                 280                 285
Asp Lys Asn Glu Asp Gly Arg Ile Gly Glu Glu Glu Val Lys Glu Ile
        290                 295                 300
Ile Met Leu Ser Ala Ser Ala Asn Lys Leu Ser Arg Leu Lys Glu Gln
305                 310                 315                 320
Ala Glu Glu Tyr Ala Ala Leu Ile Met Glu Glu Leu Asp Pro Glu Arg
                325                 330                 335
Leu Gly Tyr Ile Glu Leu Trp Gln Leu Glu Thr Leu Leu Leu Gln Lys
            340                 345                 350
Asp Thr Tyr Leu Asn Tyr Ser Gln Ala Leu Ser Tyr Thr Ser Gln Ala
            355                 360                 365
Leu Ser Gln Asn Leu Gln Gly Leu Arg Lys Arg Ser Pro Ile Arg Arg
        370                 375                 380
Met Ser Thr Lys Leu Val Tyr Ser Leu Gln Glu Asn Trp Lys Arg Ile
```

17

385   390   395   400
Trp Val Leu Val Leu Trp Ile Leu Ile Met Ile Gly Leu Phe Leu Trp
                405   410   415
Lys Phe Tyr Leu Tyr Lys Gln Lys Ser Ala Phe Gln Val Met Gly Tyr
            420   425   430   .
Cys Leu Leu Thr Ala Lys Gly Ala Ala Glu Thr Leu Lys Phe Asn Met
            435   440   445
Ala Leu Ile Leu Leu Pro Val Cys Arg Asn Thr Ile Thr Phe Leu Arg
    450   455   460
Ser Thr Lys Leu Ser Cys Phe Val Pro Phe Asp Asp Asn Ile Asn Phe
465   470   475   480
His Lys Thr Val Ala Ala Ala Ile Val Thr Gly Ile Ile Leu His Ala
                485   490   495
Gly Asn His Leu Val Cys Asp Phe Pro Lys Leu Ile His Ala Asn Asn
        500   505   510
Thr Asn Tyr Gln Lys Tyr Leu Val Asn Asp Phe Gly Pro Ser Gln Pro
        515   520   525
Gln Tyr Ile Asp Leu Val Lys Gly Val Glu Gly Val Thr Gly Ile Ile
        530   535   540
Met Val Ile Leu Met Ala Ile Ala Phe Thr Leu Ala Thr Arg Trp Phe
545   550   555   560
Arg Arg Ser Leu Ile Lys Phe Pro Lys Pro Phe Asp Arg Leu Thr Gly
                565   570   575
Phe Asn Ala Phe Trp Tyr Ser His His Leu Leu Ile Ile Val Tyr Ile
            580   585   590
Val Leu Ile Ile His Gly Thr Phe Leu Tyr Leu Val His Asn Trp Tyr
            595   600   605
Ser Lys Thr Thr Trp Met Tyr Leu Ala Val Pro Val Leu Leu Tyr Ala
        610   615   620
Gly Glu Arg Thr Leu Arg Phe Phe Arg Ser Gly Leu Tyr Thr Val Arg
625   630   635   640
Leu Leu Lys Val Ala Ile Tyr Pro Gly Asn Val Leu Thr Leu Gln Met
                645   650   655
Ser Lys Pro Pro Gln Phe Arg Tyr Lys Ser Gly Gln Tyr Met Phe Val
            660   665   670
Gln Cys Pro Ala Val Ser Pro Phe Glu Trp His Pro Phe Ser Ile Thr
            675   680   685
Ser Ala Pro Gly Asp Asp Tyr Leu Ser Ile His Ile Arg Gln Leu Gly
        690   695   700
Asp Trp Thr Gln Glu Leu Lys Arg Val Phe Ser Glu Ala Cys Glu Gln
705   710   715   720
Pro Glu Ala Gly Lys Ser Gly Leu Leu Arg Ala Asp Glu Asn Thr Lys
            725   730   735
Thr Ser Leu Pro Lys Leu Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala
        740   745   750
Gln Asp Tyr Arg Lys Tyr Asp Val Leu Leu Leu Val Gly Leu Gly Ile
        755   760   765
Gly Ala Thr Pro Phe Ile Ser Ile Leu Lys Asp Leu Leu Lys Asn Ile
    770   775   780
Val Thr Met Glu Glu Gln Ala Asp Leu Val Ser Asp Phe Ser Gly Asn
785   790   795   800
Ser Asp Met Ser Ala Ala Thr Ser Glu Gln Pro Ala Leu Asn Lys Ile
            805   810   815
Ser Pro Lys Lys Arg Lys Ser Thr Leu Lys Thr Thr Asn Ala Tyr Phe
        820   825   830
Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Val
        835   840   845
Met Asn Glu Val Ala Glu Leu Asp Gln Arg Gly Val Ile Glu Met His
    850   855   860
Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu
865   870   875   880

```
Ile Thr Met Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile
                    885                   890                   895
Val Ser Gly Thr Ser Val Arg Thr His Phe Ala Arg Pro Asn Trp Arg
            900                   905                   910
Lys Val Phe Ser Lys Thr Leu Thr Lys His Ala Asn Ala Arg Ile Gly
            915                   920                   925
Val Phe Tyr Cys Gly Ala Pro Ile Leu Ala Lys Glu Leu Ser Lys Leu
            930                   935                   940
Cys Lys Glu Phe Asn Gln Lys Gly Thr Thr Lys Phe Glu Phe His Lys
945                   950                   955                   960
Glu His Phe
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<210> 9
<211> 3316
<212> DNA
<213> Lycopersicon esculentum

<220>
<221> CDS
<222> (146)..(3112)
<223> coding for NADPH oxidase

<400> 9
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cgccactcgt gccgaattcg gcacgaggct ctgaaaaact tttcatacaa agccaatcta 60
tttctctctc tttcttttgg tcaggcttct acagaaaact ctgttttcaa cgtatattta 120
tttattgtca tttgatttgg gacag atg agg ggt tta cct ggg cat gaa cgc 172
                            Met Arg Gly Leu Pro Gly His Glu Arg
                             1               5

cgg tgg acg tcg gat acg gtg tct tcc ggg aag gat tta agt ggt gag 220
Arg Trp Thr Ser Asp Thr Val Ser Ser Gly Lys Asp Leu Ser Gly Glu
 10               15                  20                  25

tca tcg ccg gga act gat tcc ggg aat att tcc ggt ttt gct tcg gag 268
Ser Ser Pro Gly Thr Asp Ser Gly Asn Ile Ser Gly Phe Ala Ser Glu
                 30                  35                  40

gag ttt gtt gaa gtt ata ctt gat ctt cag gat gat gat acg att att 316
Glu Phe Val Glu Val Ile Leu Asp Leu Gln Asp Asp Asp Thr Ile Ile
             45                  50                  55

tta cgg agc gtt gaa ccg gct act gta atc aac att gat ggt tct gat 364
Leu Arg Ser Val Glu Pro Ala Thr Val Ile Asn Ile Asp Gly Ser Asp
         60                  65                  70

cct gct tcc gga gtc ggt att ggt gga gca tcg att gaa act ccg gcg 412
Pro Ala Ser Gly Val Gly Ile Gly Gly Ala Ser Ile Glu Thr Pro Ala
     75                  80                  85

tcg gtg acg tcg acg tcg gaa act cga tcg ccg atg atg cgt cgg agt 460
Ser Val Thr Ser Thr Ser Glu Thr Arg Ser Pro Met Met Arg Arg Ser
 90                  95                 100                 105

aca tct aat aag ttt cgt cag ttt tca cag gag ttg aaa gct gag gct 508
Thr Ser Asn Lys Phe Arg Gln Phe Ser Gln Glu Leu Lys Ala Glu Ala
                110                 115                 120

gtt gcg aaa gcg aag cat ttc tcg caa gag ctt aaa gcg gag cta agg 556
Val Ala Lys Ala Lys His Phe Ser Gln Glu Leu Lys Ala Glu Leu Arg
            125                 130                 135

aga ttc tca tgg agc cat gga cat gcg tct cgt gct ttt tcg ccg gcg 604
Arg Phe Ser Trp Ser His Gly His Ala Ser Arg Ala Phe Ser Pro Ala
            140                 145                 150

tcg ttt ttc caa aac gct gtc gtc gga aca ggc aac ggt gta gac tcg 652
Ser Phe Phe Gln Asn Ala Val Val Gly Thr Gly Asn Gly Val Asp Ser
    155                 160                 165

gct tta gcg gct cga gca tta cgt cgg cag cgt gct cag ctc gac cgg 700
Ala Leu Ala Ala Arg Ala Leu Arg Arg Gln Arg Ala Gln Leu Asp Arg
```

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      170                     175                     180                     185
act cgt tcc agc gca cac aag gct ctt cgt gga ctc aaa ttc atc agc   748
Thr Arg Ser Ser Ala His Lys Ala Leu Arg Gly Leu Lys Phe Ile Ser
                    190                     195                     200
aat aac aaa act aac gga tgg aat gaa gtt gaa aac aat ttc gct aag   796
Asn Asn Lys Thr Asn Gly Trp Asn Glu Val Glu Asn Asn Phe Ala Lys
                205                     210                     215
ctc gct aaa gac ggt tac ctt tat cgt tcc gat ttc gca caa tgc atc   844
Leu Ala Lys Asp Gly Tyr Leu Tyr Arg Ser Asp Phe Ala Gln Cys Ile
            220                     225                     230
ggt cag tac tca cgc cgg cga tca cta cag ttt aat tat aga tta att   892
Gly Gln Tyr Ser Arg Arg Arg Ser Leu Gln Phe Asn Tyr Arg Leu Ile
            235                     240                     245
aca tta att ttg att aat tat ttg gtt aaa ggt atg aag gat tca aag   940
Thr Leu Ile Leu Ile Asn Tyr Leu Val Lys Gly Met Lys Asp Ser Lys
250                     255                     260                     265
gaa ttt gcg ttg gaa ttg ttt gat gct tta agt aga aga aga aga ttg   988
Glu Phe Ala Leu Glu Leu Phe Asp Ala Leu Ser Arg Arg Arg Arg Leu
                    270                     275                     280
aag gtt gat aag att agc caa gag gaa ttg tat gag tat tgg tct caa  1036
Lys Val Asp Lys Ile Ser Gln Glu Glu Leu Tyr Glu Tyr Trp Ser Gln
                285                     290                     295
atc acc gat cag agt ttc gat tct cgg ctt cag atc ttc ttc gac atg  1084
Ile Thr Asp Gln Ser Phe Asp Ser Arg Leu Gln Ile Phe Phe Asp Met
            300                     305                     310
gtg gac aag aat gaa gat ggt cga att ggt gaa gaa gaa gta aaa gag  1132
Val Asp Lys Asn Glu Asp Gly Arg Ile Gly Glu Glu Glu Val Lys Glu
            315                     320                     325
atc atc atg cta agt gcc tct gca aac aaa tta tca aga tta aaa gaa  1180
Ile Ile Met Leu Ser Ala Ser Ala Asn Lys Leu Ser Arg Leu Lys Glu
330                     335                     340                     345
caa gca gag gag tat gca gct ctg atc atg gaa gaa tta gat cct gaa  1228
Gln Ala Glu Glu Tyr Ala Ala Leu Ile Met Glu Glu Leu Asp Pro Glu
                    350                     355                     360
aga ctt ggc tac att gag cta tgg cag ctg gaa aca ctt ctc ctc caa  1276
Arg Leu Gly Tyr Ile Glu Leu Trp Gln Leu Glu Thr Leu Leu Leu Gln
                365                     370                     375
aag gac act tac ctc aac tac agt caa gca cta agc tac aca agc caa  1324
Lys Asp Thr Tyr Leu Asn Tyr Ser Gln Ala Leu Ser Tyr Thr Ser Gln
            380                     385                     390
gct ttg agc caa aat ctg caa ggg ttg agg aag aga agc cca ata aga  1372
Ala Leu Ser Gln Asn Leu Gln Gly Leu Arg Lys Arg Ser Pro Ile Arg
            395                     400                     405
aga atg agc aca aaa ctt gtc tat tca ctg caa gag aat tgg aag aga  1420
Arg Met Ser Thr Lys Leu Val Tyr Ser Leu Gln Glu Asn Trp Lys Arg
410                     415                     420                     425
att tgg gtt ctg gtc ttg tgg att ttg ata atg att gga ctt ttt ctt  1468
Ile Trp Val Leu Val Leu Trp Ile Leu Ile Met Ile Gly Leu Phe Leu
                    430                     435                     440
tgg aag ttc tat cag tac aaa cag aaa agt gca ttt caa gtc atg ggt  1516
Trp Lys Phe Tyr Gln Tyr Lys Gln Lys Ser Ala Phe Gln Val Met Gly
                445                     450                     455
tat tgc ctt cta aca gct aag ggt gct gct gag act ctc aag ttc aac  1564
Tyr Cys Leu Leu Thr Ala Lys Gly Ala Ala Glu Thr Leu Lys Phe Asn
            460                     465                     470
atg gct tta ata ttg ttg cca gta tgc agg aac acc att aca ttc ctc  1612
Met Ala Leu Ile Leu Leu Pro Val Cys Arg Asn Thr Ile Thr Phe Leu
            475                     480                     485
agg tct act aaa ttg agc tgt ttt gta ccc ttt gat gac aac ata aac  1660
Arg Ser Thr Lys Leu Ser Cys Phe Val Pro Phe Asp Asp Asn Ile Asn
490                     495                     500                     505
```

```
ttt cac aag act gtt gct gca gcc att gtc act ggt atc ata ctc cat    1708
Phe His Lys Thr Val Ala Ala Ala Ile Val Thr Gly Ile Ile Leu His
            510             515                 520
gcc ggt aat cac ctt gta tgt gat ttc cca aag ctt ata cat gca aat    1756
Ala Gly Asn His Leu Val Cys Asp Phe Pro Lys Leu Ile His Ala Asn
            525             530                 535
agt acg aat tat cag aaa tat ttg gtg aat gat ttt ggc cca agc cag    1804
Ser Thr Asn Tyr Gln Lys Tyr Leu Val Asn Asp Phe Gly Pro Ser Gln
            540             545                 550
cct cag tac ata gat ctt gtt aaa gga gtg gag ggt gtg act gga ata    1852
Pro Gln Tyr Ile Asp Leu Val Lys Gly Val Glu Gly Val Thr Gly Ile
     555             560                 565
gtt atg gta atc ctc atg gcc att gct ttc act ctt gca acg cga tgg    1900
Val Met Val Ile Leu Met Ala Ile Ala Phe Thr Leu Ala Thr Arg Trp
570             575                 580                 585
ttt agg cgg agc ctc att aag tta ccc aaa cct ttt gat aga ctc act    1948
Phe Arg Arg Ser Leu Ile Lys Leu Pro Lys Pro Phe Asp Arg Leu Thr
            590             595                 600
ggt ttc aat gcg ttc tgg tac tcg cac cac ctt ctc atc att gtc tac    1996
Gly Phe Asn Ala Phe Trp Tyr Ser His His Leu Leu Ile Ile Val Tyr
            605             610                 615
atc gta ctg atc atc cat ggc aca ttc ctc tac ctt gtg cat aac tgg    2044
Ile Val Leu Ile Ile His Gly Thr Phe Leu Tyr Leu Val His Asn Trp
            620             625                 630
tac tcc aaa acg aca tgg atg tat ata gca gtt cct gta ctt ctt tac    2092
Tyr Ser Lys Thr Thr Trp Met Tyr Ile Ala Val Pro Val Leu Leu Tyr
            635             640                 645
gca ggg gaa aga act ctt aga ttc ttc cga tca ggc tta tac agt gtc    2140
Ala Gly Glu Arg Thr Leu Arg Phe Phe Arg Ser Gly Leu Tyr Ser Val
650             655                 660                 665
cgg ctt cta aaa gta gca ata tat cct gga aat gtc ctt act ctg caa    2188
Arg Leu Leu Lys Val Ala Ile Tyr Pro Gly Asn Val Leu Thr Leu Gln
            670             675                 680
atg tct aag cct ccg caa ttt cga tac aag agt gga cag tat atg ttt    2236
Met Ser Lys Pro Pro Gln Phe Arg Tyr Lys Ser Gly Gln Tyr Met Phe
            685             690                 695
gtc cag tgt cca gct gtt tct cca ttc gag tgg cat cca ttt tcc att    2284
Val Gln Cys Pro Ala Val Ser Pro Phe Glu Trp His Pro Phe Ser Ile
            700             705                 710
act tca gct cct ggg gat gac tac ttg agc att cat atc cga caa ctt    2332
Thr Ser Ala Pro Gly Asp Asp Tyr Leu Ser Ile His Ile Arg Gln Leu
            715             720                 725
ggt gac tgg act caa gaa ctc aag cga gtg ttt tcc gag gct tgc gag    2380
Gly Asp Trp Thr Gln Glu Leu Lys Arg Val Phe Ser Glu Ala Cys Glu
730             735                 740                 745
cag cca gag gct gga aag agt ggc ctg ctc aga gct gac gaa aac acc    2428
Gln Pro Glu Ala Gly Lys Ser Gly Leu Leu Arg Ala Asp Glu Asn Thr
            750             755                 760
aaa aca agt ttg cca aag cta tta ata gat gga cct tat gga gct cca    2476
Lys Thr Ser Leu Pro Lys Leu Leu Ile Asp Gly Pro Tyr Gly Ala Pro
            765             770                 775
gca caa gat tac cgg aag tat gat gtc tta ctg ctt gtt ggt ctt ggc    2524
Ala Gln Asp Tyr Arg Lys Tyr Asp Val Leu Leu Leu Val Gly Leu Gly
            780             785                 790
att gga gca act ccc ttt ata agt atc ctg aaa gac ttg ctc aaa aac    2572
Ile Gly Ala Thr Pro Phe Ile Ser Ile Leu Lys Asp Leu Leu Lys Asn
     795             800                 805
atc gtc gca atg gag gag caa gca gat tta gtc tcg gat ttc agt gga    2620
Ile Val Ala Met Glu Glu Gln Ala Asp Leu Val Ser Asp Phe Ser Gly
810             815                 820                 825
aac tcg gac atg agt gct gca aca agt gaa caa cca gct ctc aac aag    2668
```

```
Asn Ser Asp Met Ser Ala Ala Thr Ser Glu Gln Pro Ala Leu Asn Lys
            830                     835                 840
att tct cca aaa aag aga aag agt act cta aaa acc aca aat gca tat    2716
Ile Ser Pro Lys Lys Arg Lys Ser Thr Leu Lys Thr Thr Asn Ala Tyr
            845                     850                 855
ttt tat tgg gtg acc cgg gag caa gga tca ttt gat tgg ttc aaa ggt    2764
Phe Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly
            860                     865                 870
gtt atg aat gaa gtg gct gaa ctt gat caa agg ggt gtc atc gag atg    2812
Val Met Asn Glu Val Ala Glu Leu Asp Gln Arg Gly Val Ile Glu Met
            875                     880                 885
cat aac tac ttg acg agt gtt tat gag gaa ggg gat gca cgt tca gct    2860
His Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala
890                     895                 900                 905
ctc att acc atg gtc cag gca ctt aac cat gct aag aat ggg gtt gat    2908
Leu Ile Thr Met Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp
                910                     915                 920
att gta tca ggc acc agt gtg agg aca cat ttc gcc agg ccg aat tgg    2956
Ile Val Ser Gly Thr Ser Val Arg Thr His Phe Ala Arg Pro Asn Trp
            925                     930                 935
agg aaa gta ttt tcc aag acc tta acc aag cat gca aat gca aga ata    3004
Arg Lys Val Phe Ser Lys Thr Leu Thr Lys His Ala Asn Ala Arg Ile
            940                     945                 950
gga gtt ttc tac tgt ggt gca ccc ata tta gct aaa gaa ctc agc caa    3052
Gly Val Phe Tyr Cys Gly Ala Pro Ile Leu Ala Lys Glu Leu Ser Gln
            955                     960                 965
ctc tgc aaa gag ttt aac caa aag ggc aca aca aag ttc gag ttt cac    3100
Leu Cys Lys Glu Phe Asn Gln Lys Gly Thr Thr Lys Phe Glu Phe His
970                     975                 980                 985
aaa gaa cat ttt tagaagggcc tggagtatga ttaatcttgc atcaacggta        3152
Lys Glu His Phe
cacacatcta tcttcggtac cttatttgat tattctactg aagagataac attagtaagg  3212
aataagtcag agataaattg tacataatag ggaagaagac tatttcaaga gaaaatacat  3272
accaataaga tgtgaaaaaa aaaaaaaaaa aaaaactcgt gccg                   3316
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<210> 10
<211> 989
<212> PRT
<213> Lycopersicon esculentum

<400> 10
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Met Arg Gly Leu Pro Gly His Glu Arg Arg Trp Thr Ser Asp Thr Val
1               5                   10                  15
Ser Ser Gly Lys Asp Leu Ser Gly Glu Ser Ser Pro Gly Thr Asp Ser
            20                  25                  30
Gly Asn Ile Ser Gly Phe Ala Ser Glu Glu Phe Val Glu Val Ile Leu
            35                  40                  45
Asp Leu Gln Asp Asp Asp Thr Ile Ile Leu Arg Ser Val Glu Pro Ala
        50                  55                  60
Thr Val Ile Asn Ile Asp Gly Ser Asp Pro Ala Ser Gly Val Gly Ile
65                  70                  75                  80
Gly Gly Ala Ser Ile Glu Thr Pro Ala Ser Val Thr Ser Thr Ser Glu
                85                  90                  95
Thr Arg Ser Pro Met Met Arg Arg Ser Thr Ser Asn Lys Phe Arg Gln
            100                 105                 110
Phe Ser Gln Glu Leu Lys Ala Glu Ala Val Ala Lys Ala Lys His Phe
            115                 120                 125
Ser Gln Glu Leu Lys Ala Glu Leu Arg Arg Phe Ser Trp Ser His Gly
            130                 135                 140
His Ala Ser Arg Ala Phe Ser Pro Ala Ser Phe Phe Gln Asn Ala Val
145                 150                 155                 160
```

```
Val Gly Thr Gly Asn Gly Val Asp Ser Ala Leu Ala Ala Arg Ala Leu
                165                 170                 175
Arg Arg Gln Arg Ala Gln Leu Asp Arg Thr Arg Ser Ser Ala His Lys
                180                 185                 190
Ala Leu Arg Gly Leu Lys Phe Ile Ser Asn Asn Lys Thr Asn Gly Trp
                195                 200                 205
Asn Glu Val Glu Asn Asn Phe Ala Lys Leu Ala Lys Asp Gly Tyr Leu
    210                 215                 220
Tyr Arg Ser Asp Phe Ala Gln Cys Ile Gly Gln Tyr Ser Arg Arg Arg
225                 230                 235                 240
Ser Leu Gln Phe Asn Tyr Arg Leu Ile Thr Leu Ile Leu Ile Asn Tyr
                245                 250                 255
Leu Val Lys Gly Met Lys Asp Ser Lys Glu Phe Ala Leu Glu Leu Phe
                260                 265                 270
Asp Ala Leu Ser Arg Arg Arg Arg Leu Lys Val Asp Lys Ile Ser Gln
            275                 280                 285
Glu Glu Leu Tyr Glu Tyr Trp Ser Gln Ile Thr Asp Gln Ser Phe Asp
    290                 295                 300
Ser Arg Leu Gln Ile Phe Phe Asp Met Val Asp Lys Asn Glu Asp Gly
305                 310                 315                 320
Arg Ile Gly Glu Glu Glu Val Lys Glu Ile Ile Met Leu Ser Ala Ser
                325                 330                 335
Ala Asn Lys Leu Ser Arg Leu Lys Glu Gln Ala Glu Glu Tyr Ala Ala
            340                 345                 350
Leu Ile Met Glu Glu Leu Asp Pro Glu Arg Leu Gly Tyr Ile Glu Leu
            355                 360                 365
Trp Gln Leu Glu Thr Leu Leu Leu Gln Lys Asp Thr Tyr Leu Asn Tyr
    370                 375                 380
Ser Gln Ala Leu Ser Tyr Thr Ser Gln Ala Leu Ser Gln Asn Leu Gln
385                 390                 395                 400
Gly Leu Arg Lys Arg Ser Pro Ile Arg Arg Met Ser Thr Lys Leu Val
                405                 410                 415
Tyr Ser Leu Gln Glu Asn Trp Lys Arg Ile Trp Val Leu Val Leu Trp
                420                 425                 430
Ile Leu Ile Met Ile Gly Leu Phe Leu Trp Lys Phe Tyr Gln Tyr Lys
            435                 440                 445
Gln Lys Ser Ala Phe Gln Val Met Gly Tyr Cys Leu Leu Thr Ala Lys
    450                 455                 460
Gly Ala Ala Glu Thr Leu Lys Phe Asn Met Ala Leu Ile Leu Leu Pro
465                 470                 475                 480
Val Cys Arg Asn Thr Ile Thr Phe Leu Arg Ser Thr Lys Leu Ser Cys
                485                 490                 495
Phe Val Pro Phe Asp Asp Asn Ile Asn Phe His Lys Thr Val Ala Ala
                500                 505                 510
Ala Ile Val Thr Gly Ile Ile Leu His Ala Gly Asn His Leu Val Cys
            515                 520                 525
Asp Phe Pro Lys Leu Ile His Ala Asn Ser Thr Asn Tyr Gln Lys Tyr
    530                 535                 540
Leu Val Asn Asp Phe Gly Pro Ser Gln Pro Gln Tyr Ile Asp Leu Val
545                 550                 555                 560
Lys Gly Val Glu Gly Val Thr Gly Ile Val Met Val Ile Leu Met Ala
                565                 570                 575
Ile Ala Phe Thr Leu Ala Thr Arg Trp Phe Arg Arg Ser Leu Ile Lys
            580                 585                 590
Leu Pro Lys Pro Phe Asp Arg Leu Thr Gly Phe Asn Ala Phe Trp Tyr
            595                 600                 605
Ser His His Leu Leu Ile Ile Val Tyr Ile Val Leu Ile Ile His Gly
    610                 615                 620
Thr Phe Leu Tyr Leu Val His Asn Trp Tyr Ser Lys Thr Thr Trp Met
625                 630                 635                 640
Tyr Ile Ala Val Pro Val Leu Leu Tyr Ala Gly Glu Arg Thr Leu Arg
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                    645                    650                    655
Phe Phe Arg Ser Gly Leu Tyr Ser Val Arg Leu Leu Lys Val Ala Ile
                660                    665                    670
Tyr Pro Gly Asn Val Leu Thr Leu Gln Met Ser Lys Pro Pro Gln Phe
                675                    680                    685
Arg Tyr Lys Ser Gly Gln Tyr Met Phe Val Gln Cys Pro Ala Val Ser
    690                    695                    700
Pro Phe Glu Trp His Pro Phe Ser Ile Thr Ser Ala Pro Gly Asp Asp
705                    710                    715                    720
Tyr Leu Ser Ile His Ile Arg Gln Leu Gly Asp Trp Thr Gln Glu Leu
                725                    730                    735
Lys Arg Val Phe Ser Glu Ala Cys Glu Gln Pro Glu Ala Gly Lys Ser
                740                    745                    750
Gly Leu Leu Arg Ala Asp Glu Asn Thr Lys Thr Ser Leu Pro Lys Leu
                755                    760                    765
Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln Asp Tyr Arg Lys Tyr
    770                    775                    780
Asp Val Leu Leu Leu Val Gly Leu Gly Ile Gly Ala Thr Pro Phe Ile
785                    790                    795                    800
Ser Ile Leu Lys Asp Leu Leu Lys Asn Ile Val Ala Met Glu Glu Gln
                805                    810                    815
Ala Asp Leu Val Ser Asp Phe Ser Gly Asn Ser Asp Met Ser Ala Ala
                820                    825                    830
Thr Ser Glu Gln Pro Ala Leu Asn Lys Ile Ser Pro Lys Lys Arg Lys
                835                    840                    845
Ser Thr Leu Lys Thr Thr Asn Ala Tyr Phe Tyr Trp Val Thr Arg Glu
    850                    855                    860
Gln Gly Ser Phe Asp Trp Phe Lys Gly Val Met Asn Glu Val Ala Glu
865                    870                    875                    880
Leu Asp Gln Arg Gly Val Ile Glu Met His Asn Tyr Leu Thr Ser Val
                885                    890                    895
Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile Thr Met Val Gln Ala
                900                    905                    910
Leu Asn His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Thr Ser Val
                915                    920                    925
Arg Thr His Phe Ala Arg Pro Asn Trp Arg Lys Val Phe Ser Lys Thr
    930                    935                    940
Leu Thr Lys His Ala Asn Ala Arg Ile Gly Val Phe Tyr Cys Gly Ala
945                    950                    955                    960
Pro Ile Leu Ala Lys Glu Leu Ser Gln Leu Cys Lys Glu Phe Asn Gln
                965                    970                    975
Lys Gly Thr Thr Lys Phe Glu Phe His Lys Glu His Phe
                980                    985
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<213> Arabidopsis thaliana

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<223> coding for NADPH oxidase

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                Met Lys Pro Phe Ser Lys Asn Asp Arg Arg Arg Trp
                 1               5                   10
tca ttt gat tca gtt tcc gcc gga aaa acc gcc gtc gga agt gca tca   98
Ser Phe Asp Ser Val Ser Ala Gly Lys Thr Ala Val Gly Ser Ala Ser
        15                  20                      25
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act tca ccg gga act gaa tac tcc att aac ggt gat caa gag ttc gtt    146
Thr Ser Pro Gly Thr Glu Tyr Ser Ile Asn Gly Asp Gln Glu Phe Val
    30              35                  40
gaa gtc aca atc gat ctt caa gac gat gac aca atc gtt ctt cgt agc    194
Glu Val Thr Ile Asp Leu Gln Asp Asp Asp Thr Ile Val Leu Arg Ser
45                  50                  55                  60
gtc gag cca gca acc gcc att aat gtc atc gga gat atc tcc gac gac    242
Val Glu Pro Ala Thr Ala Ile Asn Val Ile Gly Asp Ile Ser Asp Asp
            65                  70                  75
aac acc gga ata atg act ccg gtt tcg att tcg aga tct ccg acg atg    290
Asn Thr Gly Ile Met Thr Pro Val Ser Ile Ser Arg Ser Pro Thr Met
            80                  85                  90
aaa cga act tca tct aat cgg ttc cga caa ttc tca caa gag ctt aaa    338
Lys Arg Thr Ser Ser Asn Arg Phe Arg Gln Phe Ser Gln Glu Leu Lys
        95                  100                 105
gcc gaa gct gtg gcg aaa gcg aaa cag tta tct cag gag ttg aaa cga    386
Ala Glu Ala Val Ala Lys Ala Lys Gln Leu Ser Gln Glu Leu Lys Arg
    110                 115                 120
ttc tca tgg tct cgt tct ttc tca ggt aac tta acc act act agt acc    434
Phe Ser Trp Ser Arg Ser Phe Ser Gly Asn Leu Thr Thr Thr Ser Thr
125                 130                 135                 140
gcc gct aat caa agc ggc ggt gct ggt ggt ggt ttg gtg aac tcg gct    482
Ala Ala Asn Gln Ser Gly Gly Ala Gly Gly Gly Leu Val Asn Ser Ala
                145                 150                 155
tta gaa gcg cga gcg ttg cga aag caa cgt gct cag tta gat cgg act    530
Leu Glu Ala Arg Ala Leu Arg Lys Gln Arg Ala Gln Leu Asp Arg Thr
                160                 165                 170
cgg tct agt gct caa aga gct ctt cgt ggt ttg aga ttc att agc aat    578
Arg Ser Ser Ala Gln Arg Ala Leu Arg Gly Leu Arg Phe Ile Ser Asn
            175                 180                 185
aag caa aag aac gtt gat ggt tgg aac gat gtt caa tca aat ttc gaa    626
Lys Gln Lys Asn Val Asp Gly Trp Asn Asp Val Gln Ser Asn Phe Glu
    190                 195                 200
aaa ttc gaa aaa aat ggt tac atc tat cgc tcc gat ttc gct caa tgc    674
Lys Phe Glu Lys Asn Gly Tyr Ile Tyr Arg Ser Asp Phe Ala Gln Cys
205                 210                 215                 220
ata gga atg aaa gat tcg aaa gaa ttt gca ttg gaa ctg ttc gat gca    722
Ile Gly Met Lys Asp Ser Lys Glu Phe Ala Leu Glu Leu Phe Asp Ala
                225                 230                 235
ttg agt aga aga aga aga tta aaa gta gag aaa atc aat cac gat gag    770
Leu Ser Arg Arg Arg Arg Leu Lys Val Glu Lys Ile Asn His Asp Glu
            240                 245                 250
ctt tat gag tat tgg tca caa atc aac gac gag agt ttt gat tct cgt    818
Leu Tyr Glu Tyr Trp Ser Gln Ile Asn Asp Glu Ser Phe Asp Ser Arg
            255                 260                 265
ctc cag atc ttc ttc gac ata gtg gac aag aat gaa gat ggg aga att    866
Leu Gln Ile Phe Phe Asp Ile Val Asp Lys Asn Glu Asp Gly Arg Ile
    270                 275                 280
aca gaa gag gaa gta aaa gag ata ata atg ttg agt gca tct gca aat    914
Thr Glu Glu Glu Val Lys Glu Ile Ile Met Leu Ser Ala Ser Ala Asn
285                 290                 295                 300
aag cta tca aga tta aag gaa caa gca gag gaa tat gca gct ttg att    962
Lys Leu Ser Arg Leu Lys Glu Gln Ala Glu Glu Tyr Ala Ala Leu Ile
                305                 310                 315
atg gaa gag tta gat cct gaa aga ctt ggc tac ata gag cta tgg caa   1010
Met Glu Glu Leu Asp Pro Glu Arg Leu Gly Tyr Ile Glu Leu Trp Gln
            320                 325                 330
cta gag act ttg ctt cta caa aaa gac aca tac ctc aat tac agt caa   1058
Leu Glu Thr Leu Leu Leu Gln Lys Asp Thr Tyr Leu Asn Tyr Ser Gln
            335                 340                 345
gca ttg agc tat acg agc caa gca ttg agc caa aac ctt caa ggg tta   1106
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Ala Leu Ser Tyr Thr Ser Gln Ala Leu Ser Gln Asn Leu Gln Gly Leu
    350                 355                 360

agg gga aag agt cga ata cat aga atg agt tcg gat ttc gtc tac att   1154
Arg Gly Lys Ser Arg Ile His Arg Met Ser Ser Asp Phe Val Tyr Ile
365                 370                 375                 380

atg caa gag aat tgg aaa agg ata tgg gtt tta tcc tta tgg atc atg   1202
Met Gln Glu Asn Trp Lys Arg Ile Trp Val Leu Ser Leu Trp Ile Met
                385                 390                 395

atc atg atc gga tta ttc ttg tgg aaa ttc ttc caa tac aag caa aaa   1250
Ile Met Ile Gly Leu Phe Leu Trp Lys Phe Phe Gln Tyr Lys Gln Lys
                400                 405                 410

gat gca ttt cat gtg atg gga tat tgt tta ctc aca gcc aaa gga gca   1298
Asp Ala Phe His Val Met Gly Tyr Cys Leu Leu Thr Ala Lys Gly Ala
            415                 420                 425

gct gaa aca ctt aaa ttc aac atg gct cta ata ctt ttc cca gtt tgc   1346
Ala Glu Thr Leu Lys Phe Asn Met Ala Leu Ile Leu Phe Pro Val Cys
        430                 435                 440

aga aac acc att act tgg ctt aga tcc aca aga ctc tct tac ttc gtt   1394
Arg Asn Thr Ile Thr Trp Leu Arg Ser Thr Arg Leu Ser Tyr Phe Val
445                 450                 455                 460

cct ttt gat gat aat atc aac ttc cac aag aca att gct gga gcc att   1442
Pro Phe Asp Asp Asn Ile Asn Phe His Lys Thr Ile Ala Gly Ala Ile
                465                 470                 475

gta gta gct gtg atc ctt cat att gga gac cat ctt gct tgt gat ttc   1490
Val Val Ala Val Ile Leu His Ile Gly Asp His Leu Ala Cys Asp Phe
            480                 485                 490

cct aga att gtt aga gcc acc gaa tac gat tac aat cgg tat ctg ttt   1538
Pro Arg Ile Val Arg Ala Thr Glu Tyr Asp Tyr Asn Arg Tyr Leu Phe
            495                 500                 505

cat tac ttt caa aca aaa cag cca aca tac ttc gac ctc gtt aag gga   1586
His Tyr Phe Gln Thr Lys Gln Pro Thr Tyr Phe Asp Leu Val Lys Gly
    510                 515                 520

cct gaa gga atc act ggg att tta atg gtc att ttg atg att att tca   1634
Pro Glu Gly Ile Thr Gly Ile Leu Met Val Ile Leu Met Ile Ile Ser
525                 530                 535                 540

ttc aca tta gca aca aga tgg ttt agg cgt aac cta gtc aag ctt cct   1682
Phe Thr Leu Ala Thr Arg Trp Phe Arg Arg Asn Leu Val Lys Leu Pro
                545                 550                 555

aag cca ttt gat cga cta acc ggt ttt aac gcc ttt tgg tat tcg cat   1730
Lys Pro Phe Asp Arg Leu Thr Gly Phe Asn Ala Phe Trp Tyr Ser His
                560                 565                 570

cat ttg ttc gtc att gtt tat atc ttg ctt att ctt cat ggt atc ttc   1778
His Leu Phe Val Ile Val Tyr Ile Leu Leu Ile Leu His Gly Ile Phe
            575                 580                 585

ctc tat ttc gcc aag cct tgg tat gtt cgt acg aca tgg atg tat ctt   1826
Leu Tyr Phe Ala Lys Pro Trp Tyr Val Arg Thr Thr Trp Met Tyr Leu
    590                 595                 600

gca gta cca gtt tta ctc tat ggt gga gaa aga aca ctt agg tac ttc   1874
Ala Val Pro Val Leu Leu Tyr Gly Gly Glu Arg Thr Leu Arg Tyr Phe
605                 610                 615                 620

cgt tct ggt tct tat tcg gtt cga ctg ctt aag gtt gct ata tat cct   1922
Arg Ser Gly Ser Tyr Ser Val Arg Leu Leu Lys Val Ala Ile Tyr Pro
                625                 630                 635

ggt aat gtt cta acg cta caa atg tcg aaa cca act caa ttt cgt tac   1970
Gly Asn Val Leu Thr Leu Gln Met Ser Lys Pro Thr Gln Phe Arg Tyr
                640                 645                 650

aaa agc gga caa tac atg ttt gtc caa tgt cct gcg gtt tcg cca ttc   2018
Lys Ser Gly Gln Tyr Met Phe Val Gln Cys Pro Ala Val Ser Pro Phe
                655                 660                 665

gag tgg cat cca ttc tca att act tcc gca cct gaa gat gat tat atc   2066
Glu Trp His Pro Phe Ser Ile Thr Ser Ala Pro Glu Asp Asp Tyr Ile
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        670                     675                     680
agc att cac att aga caa ctt ggt gat tgg act caa gaa ctc aaa aga    2114
Ser Ile His Ile Arg Gln Leu Gly Asp Trp Thr Gln Glu Leu Lys Arg
685                     690                     695                     700
gta ttc tct gaa gtt tgt gag cca ccg gtt ggc ggt aaa agc gga ctt    2162
Val Phe Ser Glu Val Cys Glu Pro Pro Val Gly Gly Lys Ser Gly Leu
                        705                     710                     715
ctc aga gcc gac gaa aca aca aag aaa agt ttg cca aag cta ttg ata    2210
Leu Arg Ala Asp Glu Thr Thr Lys Lys Ser Leu Pro Lys Leu Leu Ile
                    720                     725                     730
gat gga ccg tac ggt gca cca gca caa gat tat agg aaa tat gat gtt    2258
Asp Gly Pro Tyr Gly Ala Pro Ala Gln Asp Tyr Arg Lys Tyr Asp Val
                735                     740                     745
ctc tta tta gtt ggt ctt ggc att ggt gca act cca ttt atc agt atc    2306
Leu Leu Leu Val Gly Leu Gly Ile Gly Ala Thr Pro Phe Ile Ser Ile
            750                     755                     760
ttg aaa gat ttg ctt aac aac att gtt aaa atg gaa gag cat gcg gat    2354
Leu Lys Asp Leu Leu Asn Asn Ile Val Lys Met Glu Glu His Ala Asp
765                     770                     775                     780
tcg atc tcg gat ttc agt aga tca tca gaa tac agc aca gga agc aac    2402
Ser Ile Ser Asp Phe Ser Arg Ser Ser Glu Tyr Ser Thr Gly Ser Asn
                        785                     790                     795
ggt gac acg cca aga cga aag aga ata cta aaa acc aca aat gct tat    2450
Gly Asp Thr Pro Arg Arg Lys Arg Ile Leu Lys Thr Thr Asn Ala Tyr
                    800                     805                     810
ttc tac tgg gtc aca aga gaa caa ggc tct ttt gat tgg ttc aaa ggt    2498
Phe Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly
                815                     820                     825
gtc atg aac gaa gtt gca gaa ctt gac caa cgg ggt gtg ata gag atg    2546
Val Met Asn Glu Val Ala Glu Leu Asp Gln Arg Gly Val Ile Glu Met
            830                     835                     840
cat aac tat tta aca agt gtg tat gaa gaa ggt gat gct cgt tct gct    2594
His Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala
845                     850                     855                     860
ctc att aca atg gtt caa gct ctt aat cat gcc aaa aat ggt gtc gac    2642
Leu Ile Thr Met Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp
                    865                     870                     875
att gtc tct ggc act agg gtc aga aca cac ttt gca aga cct aat tgg    2690
Ile Val Ser Gly Thr Arg Val Arg Thr His Phe Ala Arg Pro Asn Trp
                880                     885                     890
aag aag gtt ctc aca aag cta agt tcc aag cat tgc aat gca aga aca    2738
Lys Lys Val Leu Thr Lys Leu Ser Ser Lys His Cys Asn Ala Arg Thr
                    895                     900                     905
gga gtg ttt tat tgc gga gta ccg gtt tta ggg aag gag ctt agc aaa    2786
Gly Val Phe Tyr Cys Gly Val Pro Val Leu Gly Lys Glu Leu Ser Lys
            910                     915                     920
cta tgc aac aca ttc aat caa aaa ggt tca acc aag ttt gaa ttt cac    2834
Leu Cys Asn Thr Phe Asn Gln Lys Gly Ser Thr Lys Phe Glu Phe His
925                     930                     935                     940
aag gag cat ttc taaaagacaa gaaggaagaa gccaaaagcc ctctagattc         2886
Lys Glu His Phe
tttaatatct caaatttagc cacttatagt ataaaggcaa tctcttcact atttaattca   2946
aagtgattaa acgttaacac actgtcaaaa gtgagtgtgt taacgtttag ctccacacgt   3006
tctaggttta tatacaccga ggcatacgtg taaatatacg agacagaaga aattcaaggg   3066
ggttttgatag aagc                                                    3080
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<213> Arabidopsis thaliana

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Val Ser Ala Gly Lys Thr Ala Val Gly Ser Ala Ser Thr Ser Pro Gly
            20                  25                  30
Thr Glu Tyr Ser Ile Asn Gly Asp Gln Glu Phe Val Glu Val Thr Ile
            35                  40                  45
Asp Leu Gln Asp Asp Asp Thr Ile Val Leu Arg Ser Val Glu Pro Ala
        50                  55                  60
Thr Ala Ile Asn Val Ile Gly Asp Ile Ser Asp Asp Asn Thr Gly Ile
65                  70                  75                  80
Met Thr Pro Val Ser Ile Ser Arg Ser Pro Thr Met Lys Arg Thr Ser
                85                  90                  95
Ser Asn Arg Phe Arg Gln Phe Ser Gln Glu Leu Lys Ala Glu Ala Val
            100                 105                 110
Ala Lys Ala Lys Gln Leu Ser Gln Glu Leu Lys Arg Phe Ser Trp Ser
            115                 120                 125
Arg Ser Phe Ser Gly Asn Leu Thr Thr Thr Ser Thr Ala Ala Asn Gln
    130                 135                 140
Ser Gly Gly Ala Gly Gly Gly Leu Val Asn Ser Ala Leu Glu Ala Arg
145                 150                 155                 160
Ala Leu Arg Lys Gln Arg Ala Gln Leu Asp Arg Thr Arg Ser Ser Ala
            165                 170                 175
Gln Arg Ala Leu Arg Gly Leu Arg Phe Ile Ser Asn Lys Gln Lys Asn
            180                 185                 190
Val Asp Gly Trp Asn Asp Val Gln Ser Asn Phe Glu Lys Phe Glu Lys
            195                 200                 205
Asn Gly Tyr Ile Tyr Arg Ser Asp Phe Ala Gln Cys Ile Gly Met Lys
    210                 215                 220
Asp Ser Lys Glu Phe Ala Leu Glu Leu Phe Asp Ala Leu Ser Arg Arg
225                 230                 235                 240
Arg Arg Leu Lys Val Glu Lys Ile Asn His Asp Glu Leu Tyr Glu Tyr
            245                 250                 255
Trp Ser Gln Ile Asn Asp Glu Ser Phe Asp Ser Arg Leu Gln Ile Phe
            260                 265                 270
Phe Asp Ile Val Asp Lys Asn Glu Asp Gly Arg Ile Thr Glu Glu Glu
            275                 280                 285
Val Lys Glu Ile Ile Met Leu Ser Ala Ser Ala Asn Lys Leu Ser Arg
            290                 295                 300
Leu Lys Glu Gln Ala Glu Glu Tyr Ala Ala Leu Ile Met Glu Glu Leu
305                 310                 315                 320
Asp Pro Glu Arg Leu Gly Tyr Ile Glu Leu Trp Gln Leu Glu Thr Leu
            325                 330                 335
Leu Leu Gln Lys Asp Thr Tyr Leu Asn Tyr Ser Gln Ala Leu Ser Tyr
            340                 345                 350
Thr Ser Gln Ala Leu Ser Gln Asn Leu Gln Gly Leu Arg Gly Lys Ser
            355                 360                 365
Arg Ile His Arg Met Ser Ser Asp Phe Val Tyr Ile Met Gln Glu Asn
    370                 375                 380
Trp Lys Arg Ile Trp Val Leu Ser Leu Trp Ile Met Ile Met Ile Gly
385                 390                 395                 400
Leu Phe Leu Trp Lys Phe Phe Gln Tyr Lys Gln Lys Asp Ala Phe His
            405                 410                 415
Val Met Gly Tyr Cys Leu Leu Thr Ala Lys Gly Ala Ala Glu Thr Leu
            420                 425                 430
Lys Phe Asn Met Ala Leu Ile Leu Phe Pro Val Cys Arg Asn Thr Ile
            435                 440                 445
Thr Trp Leu Arg Ser Thr Arg Leu Ser Tyr Phe Val Pro Phe Asp Asp
    450                 455                 460
Asn Ile Asn Phe His Lys Thr Ile Ala Gly Ala Ile Val Val Ala Val
465                 470                 475                 480
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Ile Leu His Ile Gly Asp His Leu Ala Cys Asp Phe Pro Arg Ile Val
          485   490   495

Arg Ala Thr Glu Tyr Asp Tyr Asn Arg Tyr Leu Phe His Tyr Phe Gln
          500   505   510

Thr Lys Gln Pro Thr Tyr Phe Asp Leu Val Lys Gly Pro Glu Gly Ile
          515   520   525

Thr Gly Ile Leu Met Val Ile Leu Met Ile Ile Ser Phe Thr Leu Ala
          530   535   540

Thr Arg Trp Phe Arg Arg Asn Leu Val Lys Leu Pro Lys Pro Phe Asp
545   550   555   560

Arg Leu Thr Gly Phe Asn Ala Phe Trp Tyr Ser His His Leu Phe Val
          565   570   575

Ile Val Tyr Ile Leu Leu Ile Leu His Gly Ile Phe Leu Tyr Phe Ala
          580   585   590

Lys Pro Trp Tyr Val Arg Thr Thr Trp Met Tyr Leu Ala Val Pro Val
          595   600   605

Leu Leu Tyr Gly Gly Glu Arg Thr Leu Arg Tyr Phe Arg Ser Gly Ser
          610   615   620

Tyr Ser Val Arg Leu Leu Lys Val Ala Ile Tyr Pro Gly Asn Val Leu
625   630   635   640

Thr Leu Gln Met Ser Lys Pro Thr Gln Phe Arg Tyr Lys Ser Gly Gln
          645   650   655

Tyr Met Phe Val Gln Cys Pro Ala Val Ser Pro Phe Glu Trp His Pro
          660   665   670

Phe Ser Ile Thr Ser Ala Pro Glu Asp Asp Tyr Ile Ser Ile His Ile
          675   680   685

Arg Gln Leu Gly Asp Trp Thr Gln Glu Leu Lys Arg Val Phe Ser Glu
          690   695   700

Val Cys Glu Pro Pro Val Gly Gly Lys Ser Gly Leu Leu Arg Ala Asp
705   710   715   720

Glu Thr Thr Lys Lys Ser Leu Pro Lys Leu Leu Ile Asp Gly Pro Tyr
          725   730   735

Gly Ala Pro Ala Gln Asp Tyr Arg Lys Tyr Asp Val Leu Leu Leu Val
          740   745   750

Gly Leu Gly Ile Gly Ala Thr Pro Phe Ile Ser Ile Leu Lys Asp Leu
          755   760   765

Leu Asn Asn Ile Val Lys Met Glu Glu His Ala Asp Ser Ile Ser Asp
          770   775   780

Phe Ser Arg Ser Ser Glu Tyr Ser Thr Gly Ser Asn Gly Asp Thr Pro
785   790   795   800

Arg Arg Lys Arg Ile Leu Lys Thr Thr Asn Ala Tyr Phe Tyr Trp Val
          805   810   815

Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Val Met Asn Glu
          820   825   830

Val Ala Glu Leu Asp Gln Arg Gly Val Ile Glu Met His Asn Tyr Leu
          835   840   845

Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile Thr Met
          850   855   860

Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile Val Ser Gly
865   870   875   880

Thr Arg Val Arg Thr His Phe Ala Arg Pro Asn Trp Lys Lys Val Leu
          885   890   895

Thr Lys Leu Ser Ser Lys His Cys Asn Ala Arg Thr Gly Val Phe Tyr
          900   905   910

Cys Gly Val Pro Val Leu Gly Lys Glu Leu Ser Lys Leu Cys Asn Thr
          915   920   925

Phe Asn Gln Lys Gly Ser Thr Lys Phe Glu Phe His Lys Glu His Phe
          930   935   940

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<223> coding for NADPH oxidase

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tctcgaattc g atg aaa atg aga cga ggc aat tca agt aac gac cat gaa 170
            Met Lys Met Arg Arg Gly Asn Ser Ser Asn Asp His Glu
              1   5   10
ctt ggg att cta cga gga gct aac tcg gac acc aac tcg gac acg gag 218
Leu Gly Ile Leu Arg Gly Ala Asn Ser Asp Thr Asn Ser Asp Thr Glu
     15   20   25
agc atc gct agc gac cgt ggt gcc ttt agc ggt ccg ctt ggc cgg cct 266
Ser Ile Ala Ser Asp Arg Gly Ala Phe Ser Gly Pro Leu Gly Arg Pro
 30   35   40   45
aaa cgt gcg tcc aag aaa aac gca aga ttc gcc gac gat ctt ccc aag 314
Lys Arg Ala Ser Lys Lys Asn Ala Arg Phe Ala Asp Asp Leu Pro Lys
             50   55   60
aga agc aat agt gtt gct ggc ggc cgt ggt gat gac gat gag tac gtg 362
Arg Ser Asn Ser Val Ala Gly Gly Arg Gly Asp Asp Asp Glu Tyr Val
             65   70   75
gag atc acg cta gac atc agg gac gac tcg gtg gcc gtc cat agt gtc 410
Glu Ile Thr Leu Asp Ile Arg Asp Asp Ser Val Ala Val His Ser Val
         80   85   90
caa caa gca gct gga ggt gga ggc cac ctg gag gac ccg gag cta gcc 458
Gln Gln Ala Ala Gly Gly Gly Gly His Leu Glu Asp Pro Glu Leu Ala
     95   100   105
ctt ctt acg aag aag act ctc gag agc agc ctc aac aac acc acc tcc 506
Leu Leu Thr Lys Lys Thr Leu Glu Ser Ser Leu Asn Asn Thr Thr Ser
110   115   120   125
tta tct ttc ttc cga agc acc tcc tca cgc atc aag aac gcc tcc cgc 554
Leu Ser Phe Phe Arg Ser Thr Ser Ser Arg Ile Lys Asn Ala Ser Arg
                 130   135   140
gag ctc cgc cgc gtg ttc tct aga cgt ccc tcc ccg gcc gtg cgg cgg 602
Glu Leu Arg Arg Val Phe Ser Arg Arg Pro Ser Pro Ala Val Arg Arg
             145   150   155
ttt gac cgc acg agc tcc gcg gcc atc cac gca ctc aaa ggt ctc aag 650
Phe Asp Arg Thr Ser Ser Ala Ala Ile His Ala Leu Lys Gly Leu Lys
             160   165   170
ttc att gcc acc aag acg gcc gca tgg ccg gcc gtc gac caa cgt ttc 698
Phe Ile Ala Thr Lys Thr Ala Ala Trp Pro Ala Val Asp Gln Arg Phe
     175   180   185
gat aaa ctc tcc gct gat tcc aac ggc ctc tta ctc tct gcc aag ttt 746
Asp Lys Leu Ser Ala Asp Ser Asn Gly Leu Leu Leu Ser Ala Lys Phe
190   195   200   205
tgg gaa tgc tta gga atg aat aag gaa tct aaa gac ttc gct gac cag 794
Trp Glu Cys Leu Gly Met Asn Lys Glu Ser Lys Asp Phe Ala Asp Gln
                 210   215   220
ctc ttt aga gca tta gct cgc cgg aat aac gtc tcc ggc gat gca atc 842
Leu Phe Arg Ala Leu Ala Arg Arg Asn Asn Val Ser Gly Asp Ala Ile
             225   230   235
aca aag gaa cag ctt agg ata ttc tgg gaa cag atc tca gac gaa agc 890
Thr Lys Glu Gln Leu Arg Ile Phe Trp Glu Gln Ile Ser Asp Glu Ser
             240   245   250
ttt gat gcc aaa ctc caa gtc ttt ttt gac atg gtg gac aaa gat gaa 938
Phe Asp Ala Lys Leu Gln Val Phe Phe Asp Met Val Asp Lys Asp Glu

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        255                      260                      265
gat ggg cga gta aca gaa gaa gag gtg gct gag att att agt ctt agt   986
Asp Gly Arg Val Thr Glu Glu Glu Val Ala Glu Ile Ile Ser Leu Ser
270                      275                      280                      285
gct tct gca aac aag ctc tca aat att caa aag caa gcc aaa gaa tat  1034
Ala Ser Ala Asn Lys Leu Ser Asn Ile Gln Lys Gln Ala Lys Glu Tyr
                         290                      295                      300
gcg gca ctg ata atg gaa gag ttg gac cca gac aat gct ggg ttt att  1082
Ala Ala Leu Ile Met Glu Glu Leu Asp Pro Asp Asn Ala Gly Phe Ile
                    305                      310                      315
atg atc gaa aac ttg gaa atg ttg cta tta caa gca ccg aac cag tcg  1130
Met Ile Glu Asn Leu Glu Met Leu Leu Leu Gln Ala Pro Asn Gln Ser
               320                      325                      330
gtg cgg atg gga gac agc agg ata ctt agt cag atg tta agt cag aag  1178
Val Arg Met Gly Asp Ser Arg Ile Leu Ser Gln Met Leu Ser Gln Lys
       335                      340                      345
ctt aga ccg gca aaa gag agc aac cct tta ttg aga tgg tcg gag aaa  1226
Leu Arg Pro Ala Lys Glu Ser Asn Pro Leu Leu Arg Trp Ser Glu Lys
350                      355                      360                      365
atc aaa tat ttc ata ctt gat aat tgg cag aga tta tgg atc atg atg  1274
Ile Lys Tyr Phe Ile Leu Asp Asn Trp Gln Arg Leu Trp Ile Met Met
                         370                      375                      380
tta tgg ctt ggc atc tgt ggt ggc ctc ttt act tat aaa ttc att cag  1322
Leu Trp Leu Gly Ile Cys Gly Gly Leu Phe Thr Tyr Lys Phe Ile Gln
                    385                      390                      395
tac aag aac aaa gct gcc tat ggt gtg atg ggt tat tgt gtt tgt gtc  1370
Tyr Lys Asn Lys Ala Ala Tyr Gly Val Met Gly Tyr Cys Val Cys Val
               400                      405                      410
gcc aaa gga ggc gcc gag act ctc aaa ttc aac atg gct ctc ata ttg  1418
Ala Lys Gly Gly Ala Glu Thr Leu Lys Phe Asn Met Ala Leu Ile Leu
       415                      420                      425
ttg cct gtt tgt cga aac acc atc act tgg ctt agg aac aag acc aag  1466
Leu Pro Val Cys Arg Asn Thr Ile Thr Trp Leu Arg Asn Lys Thr Lys
430                      435                      440                      445
ctt ggt act gtc gtt cct ttt gat gat agt ctt aac ttc cac aag gtt  1514
Leu Gly Thr Val Val Pro Phe Asp Asp Ser Leu Asn Phe His Lys Val
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att gca agc ggg ata gtc gtc ggt gtt ttg ctc cat gcg ggt gcc cat  1562
Ile Ala Ser Gly Ile Val Val Gly Val Leu Leu His Ala Gly Ala His
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tta acg tgt gat ttt cca cgt tta att gcc gcg gat gag gac acc tat  1610
Leu Thr Cys Asp Phe Pro Arg Leu Ile Ala Ala Asp Glu Asp Thr Tyr
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gag ccg atg gaa aaa tac ttt ggg gat caa ccg act agc tac tgg tgg  1658
Glu Pro Met Glu Lys Tyr Phe Gly Asp Gln Pro Thr Ser Tyr Trp Trp
       495                      500                      505
ttt gtg aaa gga gtg gaa gga tgg act ggc att gtg atg gtt gtg cta  1706
Phe Val Lys Gly Val Glu Gly Trp Thr Gly Ile Val Met Val Val Leu
510                      515                      520                      525
atg gct ata gcc ttt aca ctc gct acg cct tgg ttc cga cgt aac aag  1754
Met Ala Ile Ala Phe Thr Leu Ala Thr Pro Trp Phe Arg Arg Asn Lys
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ctt aac tta cct aac ttc ctc aag aag ctt acc ggt ttc aac gcc ttt  1802
Leu Asn Leu Pro Asn Phe Leu Lys Lys Leu Thr Gly Phe Asn Ala Phe
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tgg tac acc cac cat ttg ttc atc att gtt tat gct ctt ctc att gtc  1850
Trp Tyr Thr His His Leu Phe Ile Ile Val Tyr Ala Leu Leu Ile Val
               560                      565                      570
cat ggt atc aag ctc tac ctc aca aag att tgg tat cag aag acg aca  1898
His Gly Ile Lys Leu Tyr Leu Thr Lys Ile Trp Tyr Gln Lys Thr Thr
               575                      580                      585
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tgg atg tat ctt gct gta ccc atc ctt cta tat gca tct gag agg ctg    1946
Trp Met Tyr Leu Ala Val Pro Ile Leu Leu Tyr Ala Ser Glu Arg Leu
590                     595                 600                 605
ctc cgt gct ttc aga tca agc atc aaa ccg gtt aag atg atc aag gtg    1994
Leu Arg Ala Phe Arg Ser Ser Ile Lys Pro Val Lys Met Ile Lys Val
                    610                 615                 620
gct gtt tac ccc ggg aac gtg ttg tct cta cac atg acg aag cca caa    2042
Ala Val Tyr Pro Gly Asn Val Leu Ser Leu His Met Thr Lys Pro Gln
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gga ttc aaa tac aaa agt gga cag ttc atg ttg gtg aac tgc cga gcc    2090
Gly Phe Lys Tyr Lys Ser Gly Gln Phe Met Leu Val Asn Cys Arg Ala
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gta tct cca ttc gaa tgg cat cct ttc tca atc aca tca gct ccc gga    2138
Val Ser Pro Phe Glu Trp His Pro Phe Ser Ile Thr Ser Ala Pro Gly
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gac gat tac ctg agc gta cat atc cgc act ctc ggt gac tgg aca cgt    2186
Asp Asp Tyr Leu Ser Val His Ile Arg Thr Leu Gly Asp Trp Thr Arg
670                 675                 680                 685
aag ctc agg acc gtt ttc tcc gag gtt tgc aaa cct cct acc gcc ggt    2234
Lys Leu Arg Thr Val Phe Ser Glu Val Cys Lys Pro Pro Thr Ala Gly
                690                 695                 700
aaa agc ggt ctt ctc cga gca gac gga gga gat gga aac ctc ccg ttc    2282
Lys Ser Gly Leu Leu Arg Ala Asp Gly Gly Asp Gly Asn Leu Pro Phe
            705                 710                 715
ccg aag gtc ctt atc gac ggt cca tac ggt gct ccc gca caa gac tac    2330
Pro Lys Val Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln Asp Tyr
            720                 725                 730
aag aaa tac gac gtg gta ctc ctc gta ggt ctc ggc att gga gcc acg    2378
Lys Lys Tyr Asp Val Val Leu Leu Val Gly Leu Gly Ile Gly Ala Thr
        735                 740                 745
cct atg atc agt atc ctt aag gac atc atc aac aac atg aaa ggt cct    2426
Pro Met Ile Ser Ile Leu Lys Asp Ile Ile Asn Asn Met Lys Gly Pro
750                 755                 760                 765
gac cgc gac agc gac att gag aac aat aac agt aac aac aat agt aaa    2474
Asp Arg Asp Ser Asp Ile Glu Asn Asn Asn Ser Asn Asn Asn Ser Lys
                770                 775                 780
ggg ttt aag aca agg aaa gct tat ttc tac tgg gtg act agg gaa caa    2522
Gly Phe Lys Thr Arg Lys Ala Tyr Phe Tyr Trp Val Thr Arg Glu Gln
            785                 790                 795
gga tca ttc gag tgg ttc aag gga ata atg gac gag att tcg gag tta    2570
Gly Ser Phe Glu Trp Phe Lys Gly Ile Met Asp Glu Ile Ser Glu Leu
            800                 805                 810
gac gag gaa gga atc atc gag ctt cac aat tat tgc acg agt gtg tac    2618
Asp Glu Glu Gly Ile Ile Glu Leu His Asn Tyr Cys Thr Ser Val Tyr
        815                 820                 825
gag gaa ggt gat gca aga gtg gct ctc att gcc atg ctt cag tcg ttg    2666
Glu Glu Gly Asp Ala Arg Val Ala Leu Ile Ala Met Leu Gln Ser Leu
830                 835                 840                 845
caa cac gct aag aac ggt gtg gat gtt gtg tcg ggt aca cgt gtc aag    2714
Gln His Ala Lys Asn Gly Val Asp Val Val Ser Gly Thr Arg Val Lys
                850                 855                 860
tcc cac ttc gct aaa cct aac tgg aga caa gtc tac aag aag atc gct    2762
Ser His Phe Ala Lys Pro Asn Trp Arg Gln Val Tyr Lys Lys Ile Ala
            865                 870                 875
gtt caa cat ccc ggc aaa aga ata gga gtc ttc tac tgt gga atg cca    2810
Val Gln His Pro Gly Lys Arg Ile Gly Val Phe Tyr Cys Gly Met Pro
            880                 885                 890
gga atg ata aag gaa tta aaa aat cta gct ttg gat ttt tct cga aag    2858
Gly Met Ile Lys Glu Leu Lys Asn Leu Ala Leu Asp Phe Ser Arg Lys
895                 900                 905
aca act acc aag ttt gac ttc cac aaa gag aac ttc tagattaatt        2904
Thr Thr Thr Lys Phe Asp Phe His Lys Glu Asn Phe
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Thr Thr Thr Lys Phe Asp Phe His Lys Glu Asn Phe
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atatacgttg tagaaaaata aaacaagaaa caactataca aataaatatt tattttaaat 2964
tcttttcatt ttatgtaaaa ttatctgagt tatctttttt tgttaaaaaa aaaaaaaaaa 3024
aaaaaaaaaa a                                                    3035
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Ser Asp Arg Gly Ala Phe Ser Gly Pro Leu Gly Arg Pro Lys Arg Ala
            35                  40                  45
Ser Lys Lys Asn Ala Arg Phe Ala Asp Asp Leu Pro Lys Arg Ser Asn
    50                  55                  60
Ser Val Ala Gly Gly Arg Gly Asp Asp Asp Glu Tyr Val Glu Ile Thr
65                  70                  75                  80
Leu Asp Ile Arg Asp Asp Ser Val Ala Val His Ser Val Gln Gln Ala
                85                  90                  95
Ala Gly Gly Gly Gly His Leu Glu Asp Pro Glu Leu Ala Leu Leu Thr
           100                 105                 110
Lys Lys Thr Leu Glu Ser Ser Leu Asn Asn Thr Thr Ser Leu Ser Phe
           115                 120                 125
Phe Arg Ser Thr Ser Ser Arg Ile Lys Asn Ala Ser Arg Glu Leu Arg
    130                 135                 140
Arg Val Phe Ser Arg Arg Pro Ser Pro Ala Val Arg Arg Phe Asp Arg
145                 150                 155                 160
Thr Ser Ser Ala Ala Ile His Ala Leu Lys Gly Leu Lys Phe Ile Ala
                165                 170                 175
Thr Lys Thr Ala Ala Trp Pro Ala Val Asp Gln Arg Phe Asp Lys Leu
           180                 185                 190
Ser Ala Asp Ser Asn Gly Leu Leu Leu Ser Ala Lys Phe Trp Glu Cys
           195                 200                 205
Leu Gly Met Asn Lys Glu Ser Lys Asp Phe Ala Asp Gln Leu Phe Arg
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Ala Leu Ala Arg Arg Asn Asn Val Ser Gly Asp Ala Ile Thr Lys Glu
225                 230                 235                 240
Gln Leu Arg Ile Phe Trp Glu Gln Ile Ser Asp Glu Ser Phe Asp Ala
                245                 250                 255
Lys Leu Gln Val Phe Phe Asp Met Val Asp Lys Asp Glu Asp Gly Arg
           260                 265                 270
Val Thr Glu Glu Glu Val Ala Glu Ile Ile Ser Leu Ser Ala Ser Ala
           275                 280                 285
Asn Lys Leu Ser Asn Ile Gln Lys Gln Ala Lys Glu Tyr Ala Ala Leu
    290                 295                 300
Ile Met Glu Glu Leu Asp Pro Asp Asn Ala Gly Phe Ile Met Ile Glu
305                 310                 315                 320
Asn Leu Glu Met Leu Leu Leu Gln Ala Pro Asn Gln Ser Val Arg Met
                325                 330                 335
Gly Asp Ser Arg Ile Leu Ser Gln Met Leu Ser Gln Lys Leu Arg Pro
           340                 345                 350
Ala Lys Glu Ser Asn Pro Leu Leu Arg Trp Ser Glu Lys Ile Lys Tyr
           355                 360                 365
Phe Ile Leu Asp Asn Trp Gln Arg Leu Trp Ile Met Met Leu Trp Leu
    370                 375                 380
Gly Ile Cys Gly Gly Leu Phe Thr Tyr Lys Phe Ile Gln Tyr Lys Asn
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Lys Ala Ala Tyr Gly Val Met Gly Tyr Cys Val Cys Val Ala Lys Gly
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Gly Ala Glu Thr Leu Lys Phe Asn Met Ala Leu Ile Leu Leu Pro Val
            420                      425                    430
Cys Arg Asn Thr Ile Thr Trp Leu Arg Asn Lys Thr Lys Leu Gly Thr
            435                      440                    445
Val Val Pro Phe Asp Asp Ser Leu Asn Phe His Lys Val Ile Ala Ser
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Gly Ile Val Val Gly Val Leu Leu His Ala Gly Ala His Leu Thr Cys
465                      470                    475                      480
Asp Phe Pro Arg Leu Ile Ala Ala Asp Glu Asp Thr Tyr Glu Pro Met
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Glu Lys Tyr Phe Gly Asp Gln Pro Thr Ser Tyr Trp Trp Phe Val Lys
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Gly Val Glu Gly Trp Thr Gly Ile Val Met Val Val Leu Met Ala Ile
            515                      520                    525
Ala Phe Thr Leu Ala Thr Pro Trp Phe Arg Arg Asn Lys Leu Asn Leu
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Pro Asn Phe Leu Lys Lys Leu Thr Gly Phe Asn Ala Phe Trp Tyr Thr
545                      550                    555                      560
His His Leu Phe Ile Ile Val Tyr Ala Leu Leu Ile Val His Gly Ile
                565                      570                    575
Lys Leu Tyr Leu Thr Lys Ile Trp Tyr Gln Lys Thr Thr Trp Met Tyr
                580                      585                    590
Leu Ala Val Pro Ile Leu Leu Tyr Ala Ser Glu Arg Leu Leu Arg Ala
            595                      600                    605
Phe Arg Ser Ser Ile Lys Pro Val Lys Met Ile Lys Val Ala Val Tyr
    610                      615                    620
Pro Gly Asn Val Leu Ser Leu His Met Thr Lys Pro Gln Gly Phe Lys
625                      630                    635                      640
Tyr Lys Ser Gly Gln Phe Met Leu Val Asn Cys Arg Ala Val Ser Pro
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Phe Glu Trp His Pro Phe Ser Ile Thr Ser Ala Pro Gly Asp Asp Tyr
                660                      665                    670
Leu Ser Val His Ile Arg Thr Leu Gly Asp Trp Thr Arg Lys Leu Arg
            675                      680                    685
Thr Val Phe Ser Glu Val Cys Lys Pro Pro Thr Ala Gly Lys Ser Gly
    690                      695                    700
Leu Leu Arg Ala Asp Gly Gly Asp Gly Asn Leu Pro Phe Pro Lys Val
705                      710                    715                      720
Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln Asp Tyr Lys Lys Tyr
            725                      730                    735
Asp Val Val Leu Leu Val Gly Leu Gly Ile Gly Ala Thr Pro Met Ile
        740                      745                    750
Ser Ile Leu Lys Asp Ile Ile Asn Asn Met Lys Gly Pro Asp Arg Asp
    755                      760                    765
Ser Asp Ile Glu Asn Asn Asn Ser Asn Asn Asn Ser Lys Gly Phe Lys
    770                      775                    780
Thr Arg Lys Ala Tyr Phe Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe
785                      790                    795                      800
Glu Trp Phe Lys Gly Ile Met Asp Glu Ile Ser Glu Leu Asp Glu Glu
                805                      810                    815
Gly Ile Ile Glu Leu His Asn Tyr Cys Thr Ser Val Tyr Glu Glu Gly
            820                      825                    830
Asp Ala Arg Val Ala Leu Ile Ala Met Leu Gln Ser Leu Gln His Ala
            835                      840                    845
Lys Asn Gly Val Asp Val Val Ser Gly Thr Arg Val Lys Ser His Phe
    850                      855                    860
Ala Lys Pro Asn Trp Arg Gln Val Tyr Lys Lys Ile Ala Val Gln His
865                      870                    875                      880
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Pro Gly Lys Arg Ile Gly Val Phe Tyr Cys Gly Met Pro Gly Met Ile
             885   890   895

Lys Glu Leu Lys Asn Leu Ala Leu Asp Phe Ser Arg Lys Thr Thr Thr
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Lys Phe Asp Phe His Lys Glu Asn Phe
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ataccaatta ttaatctttt gtcatctttt tccttctcgc gttcatatat actggaatat 180
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gttcactact tttatttcaa cctccttaaa gttattcat tcatattttt tctcaaagaa 300
aaaactatag aa atg caa aat tcg gaa aat cat cat ccg cac cac cag cac 351
             Met Gln Asn Ser Glu Asn His His Pro His His Gln His
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cac cat tcg gac aca gag ata att gga aat gat aga gcg tcg tac agt 399
His His Ser Asp Thr Glu Ile Ile Gly Asn Asp Arg Ala Ser Tyr Ser
    15   20   25

ggt ccg tta agc gga ccg tta aac aaa cga ggc ggc aaa aag agt gcg 447
Gly Pro Leu Ser Gly Pro Leu Asn Lys Arg Gly Gly Lys Lys Ser Ala
 30   35   40   45

aga ttt aac att cct gaa tct acc gac atc gga acc agt gtc gga acc 495
Arg Phe Asn Ile Pro Glu Ser Thr Asp Ile Gly Thr Ser Val Gly Thr
            50   55   60

ggc ggc aag tcc aat gat gat gcg tac gtt gaa atc act ctc gat gtc 543
Gly Gly Lys Ser Asn Asp Asp Ala Tyr Val Glu Ile Thr Leu Asp Val
        65   70   75

cgc gaa gat tcc gtc gct gtc cac agt gtc aaa act gcc ggc ggt gat 591
Arg Glu Asp Ser Val Ala Val His Ser Val Lys Thr Ala Gly Gly Asp
        80   85   90

gac gtg gaa gat ccc gag ctg gct tta ttg gct aaa ggc tta gag aag 639
Asp Val Glu Asp Pro Glu Leu Ala Leu Leu Ala Lys Gly Leu Glu Lys
    95   100   105

aag tcc act tta gga tct tca ctt gtt cga aat gct tcg tct aga att 687
Lys Ser Thr Leu Gly Ser Ser Leu Val Arg Asn Ala Ser Ser Arg Ile
110   115   120   125

cgg caa gtg tca caa gag ctc agg cgt ttg gct tcc tta aat aaa cgc 735
Arg Gln Val Ser Gln Glu Leu Arg Arg Leu Ala Ser Leu Asn Lys Arg
          130   135   140

cca att cct act gga agg ttc gac agg aat aaa tca gct gct gct cat 783
Pro Ile Pro Thr Gly Arg Phe Asp Arg Asn Lys Ser Ala Ala Ala His
         145   150   155

gct ctt aaa ggt ctc aag ttt att agt aag acc gac ggc ggc gct ggt 831
Ala Leu Lys Gly Leu Lys Phe Ile Ser Lys Thr Asp Gly Gly Ala Gly
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tgg gcc gcc gtc gag aag cgg ttc gat gag att act gct tct act act    879
Trp Ala Ala Val Glu Lys Arg Phe Asp Glu Ile Thr Ala Ser Thr Thr
    175                 180                 185
ggt ttg ctt cct cgt gcc aaa ttt gga gaa tgt ata ggt atg aat aag    927
Gly Leu Leu Pro Arg Ala Lys Phe Gly Glu Cys Ile Gly Met Asn Lys
190                 195                 200                 205
gag tct aag gaa ttt gct gtt gag cta tat gat gcg cta gct cgg agg    975
Glu Ser Lys Glu Phe Ala Val Glu Leu Tyr Asp Ala Leu Ala Arg Arg
                    210                 215                 220
aga aac att aca act gat tcc att aac aaa gca cag ctc aaa gag ttc    1023
Arg Asn Ile Thr Thr Asp Ser Ile Asn Lys Ala Gln Leu Lys Glu Phe
                225                 230                 235
tgg gac caa gtg gct gac caa agt ttt gat tct cgc ctt caa aca ttt    1071
Trp Asp Gln Val Ala Asp Gln Ser Phe Asp Ser Arg Leu Gln Thr Phe
            240                 245                 250
ttt gac atg gtt gat aaa gat gct gat ggt aga att aca gaa gaa gaa    1119
Phe Asp Met Val Asp Lys Asp Ala Asp Gly Arg Ile Thr Glu Glu Glu
    255                 260                 265
gtc aga gag att ata ggc ctt agc gcg tcg gcc aac agg ctg tca aca    1167
Val Arg Glu Ile Ile Gly Leu Ser Ala Ser Ala Asn Arg Leu Ser Thr
270                 275                 280                 285
atc cag aaa caa gct gat gaa tac gca gca atg atc atg gaa gag ttg    1215
Ile Gln Lys Gln Ala Asp Glu Tyr Ala Ala Met Ile Met Glu Glu Leu
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gat cct aac aac ctc gga tac att atg att gag aac ttg gaa atg ctt    1263
Asp Pro Asn Asn Leu Gly Tyr Ile Met Ile Glu Asn Leu Glu Met Leu
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tta ctg caa gca cca aat caa tca gtg caa aga gga ggc gaa agt cgg    1311
Leu Leu Gln Ala Pro Asn Gln Ser Val Gln Arg Gly Gly Glu Ser Arg
            320                 325                 330
aac ttg agt caa atg cta agt caa aaa cta aag cat aca caa gag aga    1359
Asn Leu Ser Gln Met Leu Ser Gln Lys Leu Lys His Thr Gln Glu Arg
            335                 340                 345
aat cca ata gta aga tgg tac aag agt ttc atg tac ttt ttg ctg gat    1407
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350                 355                 360                 365
aat tgg caa aga gtt tgg gta ttg tta ctg tgg att gga att atg gct    1455
Asn Trp Gln Arg Val Trp Val Leu Leu Leu Trp Ile Gly Ile Met Ala
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ggt cta ttt aca tgg aaa tat ata cag tat aaa gaa aaa gct gca tat    1503
Gly Leu Phe Thr Trp Lys Tyr Ile Gln Tyr Lys Glu Lys Ala Ala Tyr
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aaa gtc atg ggt ccc tgt gtg tgt ttt gcc aaa ggt gct gct gaa aca    1551
Lys Val Met Gly Pro Cys Val Cys Phe Ala Lys Gly Ala Ala Glu Thr
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Leu Lys Leu Asn Met Ala Ile Ile Leu Phe Pro Val Cys Arg Asn Thr
    415                 420                 425
atc aca tgg ctt cga aat aag acc aga tta ggt gct gct gtt cct ttt    1647
Ile Thr Trp Leu Arg Asn Lys Thr Arg Leu Gly Ala Ala Val Pro Phe
430                 435                 440                 445
gat gat aac ctt aat ttt cac aaa gtg ata gca gtg gca att gct ctt    1695
Asp Asp Asn Leu Asn Phe His Lys Val Ile Ala Val Ala Ile Ala Leu
                450                 455                 460
ggg gtt gga ata cac gga cta tct cac ttg aca tgt gat ttt cct cgg    1743
Gly Val Gly Ile His Gly Leu Ser His Leu Thr Cys Asp Phe Pro Arg
            465                 470                 475
ctt tta aat gct agt gaa gaa gaa tat gaa cca atg aag tac tat ttt    1791
Leu Leu Asn Ala Ser Glu Glu Glu Tyr Glu Pro Met Lys Tyr Tyr Phe
            480                 485                 490
gga gat cag cca gaa agc tat tgg tgg ttt ata aaa gga gta gaa ggg    1839
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Gly Asp Gln Pro Glu Ser Tyr Trp Trp Phe Ile Lys Gly Val Glu Gly
495                     500                 505
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Val Thr Gly Ile Ile Met Val Val Leu Met Ala Ile Ala Phe Thr Leu
510                 515                 520                     525
gca acc cca tgg ttt aga agg aat aga gtt agt ttg cca aaa cca ttt   1935
Ala Thr Pro Trp Phe Arg Arg Asn Arg Val Ser Leu Pro Lys Pro Phe
                530                 535                 540
cac aaa ctc act gga tnt aat gcc ttt tgg tac tct cac cat ctc ttt   1983
His Lys Leu Thr Gly Xaa Asn Ala Phe Trp Tyr Ser His His Leu Phe
                545                 550                 555
gtt atc gtc tac act ctg ttc att gtg cat ggt gaa aag cta tac att   2031
Val Ile Val Tyr Thr Leu Phe Ile Val His Gly Glu Lys Leu Tyr Ile
                560                 565                 570
acc aaa gat tgg tac aag aga acc gac atg gat gta ctt tta act atc   2079
Thr Lys Asp Trp Tyr Lys Arg Thr Asp Met Asp Val Leu Leu Thr Ile
575                     580                 585
cca atc ata ctc tat gct agt gaa agg ttg att agg gca ttc agg tca   2127
Pro Ile Ile Leu Tyr Ala Ser Glu Arg Leu Ile Arg Ala Phe Arg Ser
590                     595                 600                 605
agc att aaa gct gtt aag att ttg aag gtg gca gta tat cca gga aat   2175
Ser Ile Lys Ala Val Lys Ile Leu Lys Val Ala Val Tyr Pro Gly Asn
                610                 615                 620
gtg ttg gca ctt cac atg tca aaa cca cag ggc tac aaa tac aaa agt   2223
Val Leu Ala Leu His Met Ser Lys Pro Gln Gly Tyr Lys Tyr Lys Ser
                625                 630                 635
ggg caa tac atg ttt gtc aac tgt gct gca gtt tct cca ttt gag tgg   2271
Gly Gln Tyr Met Phe Val Asn Cys Ala Ala Val Ser Pro Phe Glu Trp
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His Pro Phe Ser Ile Thr Ser Ala Pro Gly Asp Asp Tyr Leu Ser Val
655                     660                 665
cat att cga act ctt ggt gat tgg acc agg caa ctt aaa act gtt ttc   2367
His Ile Arg Thr Leu Gly Asp Trp Thr Arg Gln Leu Lys Thr Val Phe
670                     675                 680                 685
tcc gag gtt tgc cag cca cca cct aat gga aaa agt gga ctc ctc aga   2415
Ser Glu Val Cys Gln Pro Pro Pro Asn Gly Lys Ser Gly Leu Leu Arg
                690                 695                 700
gct gac tac ttg caa gga gag aat aat cct aat ttc cca agg gtg tta   2463
Ala Asp Tyr Leu Gln Gly Glu Asn Asn Pro Asn Phe Pro Arg Val Leu
                705                 710                 715
ata gat gga cca tat gga gca cca gca caa gac tac aag aaa tat gag   2511
Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln Asp Tyr Lys Lys Tyr Glu
                720                 725                 730
gtg gtt ttg ttg gta ggt ctt gga att gga gct aca cca atg atc agt   2559
Val Val Leu Leu Val Gly Leu Gly Ile Gly Ala Thr Pro Met Ile Ser
735                     740                 745
att gtt aaa gac att gtc aac aac atg aag gca atg gac gaa gaa gaa   2607
Ile Val Lys Asp Ile Val Asn Asn Met Lys Ala Met Asp Glu Glu Glu
750                     755                 760                 765
aat tcc ttg gaa gat gga cac aat aat aat atg gca cca aat tct agc   2655
Asn Ser Leu Glu Asp Gly His Asn Asn Asn Met Ala Pro Asn Ser Ser
                770                 775                 780
ccc aat att gca aaa aat aag ggt aat aaa tca ggt tca gca agt gga   2703
Pro Asn Ile Ala Lys Asn Lys Gly Asn Lys Ser Gly Ser Ala Ser Gly
                785                 790                 795
gga aat aat ttc aat aca agg aga gca tat ttc tat tgg gtt act aga   2751
Gly Asn Asn Phe Asn Thr Arg Arg Ala Tyr Phe Tyr Trp Val Thr Arg
                800                 805                 810
gaa caa ggt tca ttt gat tgg ttc aaa ggt ata atg aat gaa gct gct   2799
Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Ile Met Asn Glu Ala Ala
```

```
        815                  820                  825
gaa atg gac cat aag gga gta att gaa atg cat aat tat tgt act agt   2847
Glu Met Asp His Lys Gly Val Ile Glu Met His Asn Tyr Cys Thr Ser
830                  835                  840                  845
gtt tat gaa gaa ggt gat gct cgt tct gct ctt att act atg ctt cag   2895
Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile Thr Met Leu Gln
                     850                  855                  860
tct ctt cac cat gcc aaa aat ggt gtt gac att gtc tct ggc acc aga   2943
Ser Leu His His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Thr Arg
                865                  870                  875
gtt aag tca cat ttt gct aaa cct aat tgg cgt aat gtc tac aaa cgc   2991
Val Lys Ser His Phe Ala Lys Pro Asn Trp Arg Asn Val Tyr Lys Arg
            880                  885                  890
att gct ctc aac cac cct gag gct aaa gtt ggg gtc ttc tat tgt ggg   3039
Ile Ala Leu Asn His Pro Glu Ala Lys Val Gly Val Phe Tyr Cys Gly
        895                  900                  905
gca cca gca ctg acc aaa gaa cta aga caa cac gcc ttg gat ttt tca   3087
Ala Pro Ala Leu Thr Lys Glu Leu Arg Gln His Ala Leu Asp Phe Ser
910                  915                  920                  925
cac aag aca tct acc aag ttt gat ttc cat aaa gaa aat ttt            3129
His Lys Thr Ser Thr Lys Phe Asp Phe His Lys Glu Asn Phe
                     930                  935
tgagcaaaga atagaccatt aagcagagca ttaaaatttc atcaaacag ctaaggacac  3189
aggttgtttt atagaagtct accaactctc cctattgtgt acagataatg ttgcacttca  3249
agttgatata tagttgtggt tgtgatgcta gtatattaca aaataataag attatttta   3309
tttgtagtaa aaaaaaaaaa aaaaaaaaa                                    3338
```

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<210> 16
<211> 939
<212> PRT
<213> Nicotiana tabacum

<220>
<221>  misc_feature
<222>  (547)..(547)
<223>  The 'Xaa' at location 547 stands for Tyr, Cys, Ser, or Phe.

<400> 16
Met Gln Asn Ser Glu Asn His His Pro His His Gln His His His Ser
1               5                   10                  15
Asp Thr Glu Ile Ile Gly Asn Asp Arg Ala Ser Tyr Ser Gly Pro Leu
                20                  25                  30
Ser Gly Pro Leu Asn Lys Arg Gly Gly Lys Lys Ser Ala Arg Phe Asn
            35                  40                  45
Ile Pro Glu Ser Thr Asp Ile Gly Thr Ser Val Gly Thr Gly Gly Lys
        50                  55                  60
Ser Asn Asp Asp Ala Tyr Val Glu Ile Thr Leu Asp Val Arg Glu Asp
65                  70                  75                  80
Ser Val Ala Val His Ser Val Lys Thr Ala Gly Gly Asp Asp Val Glu
                85                  90                  95
Asp Pro Glu Leu Ala Leu Leu Ala Lys Gly Leu Glu Lys Lys Ser Thr
            100                 105                 110
Leu Gly Ser Ser Leu Val Arg Asn Ala Ser Ser Arg Ile Arg Gln Val
        115                 120                 125
Ser Gln Glu Leu Arg Arg Leu Ala Ser Leu Asn Lys Arg Pro Ile Pro
    130                 135                 140
Thr Gly Arg Phe Asp Arg Asn Lys Ser Ala Ala Ala His Ala Leu Lys
145                 150                 155                 160
Gly Leu Lys Phe Ile Ser Lys Thr Asp Gly Gly Ala Gly Trp Ala Ala
                165                 170                 175
Val Glu Lys Arg Phe Asp Glu Ile Thr Ala Ser Thr Thr Gly Leu Leu
```

```
                  180                      185                      190
Pro Arg Ala Lys Phe Gly Glu Cys Ile Gly Met Asn Lys Glu Ser Lys
         195                      200              205
Glu Phe Ala Val Glu Leu Tyr Asp Ala Leu Ala Arg Arg Asn Ile
    210                      215                  220
Thr Thr Asp Ser Ile Asn Lys Ala Gln Leu Lys Glu Phe Trp Asp Gln
225                      230                  235                      240
Val Ala Asp Gln Ser Phe Asp Ser Arg Leu Gln Thr Phe Phe Asp Met
             245                      250                  255
Val Asp Lys Asp Ala Asp Gly Arg Ile Thr Glu Glu Val Arg Glu
         260                      265                  270
Ile Ile Gly Leu Ser Ala Ser Ala Asn Arg Leu Ser Thr Ile Gln Lys
         275                      280                  285
Gln Ala Asp Glu Tyr Ala Ala Met Ile Met Glu Glu Leu Asp Pro Asn
    290                      295                  300
Asn Leu Gly Tyr Ile Met Ile Glu Asn Leu Glu Met Leu Leu Leu Gln
305                      310                  315                      320
Ala Pro Asn Gln Ser Val Gln Arg Gly Gly Glu Ser Arg Asn Leu Ser
             325                      330                  335
Gln Met Leu Ser Gln Lys Leu Lys His Thr Gln Glu Arg Asn Pro Ile
         340                      345                  350
Val Arg Trp Tyr Lys Ser Phe Met Tyr Phe Leu Leu Asp Asn Trp Gln
         355                      360                  365
Arg Val Trp Val Leu Leu Leu Trp Ile Gly Ile Met Ala Gly Leu Phe
    370                      375                  380
Thr Trp Lys Tyr Ile Gln Tyr Lys Glu Lys Ala Ala Tyr Lys Val Met
385                      390                  395                      400
Gly Pro Cys Val Cys Phe Ala Lys Gly Ala Ala Glu Thr Leu Lys Leu
             405                      410                  415
Asn Met Ala Ile Ile Leu Phe Pro Val Cys Arg Asn Thr Ile Thr Trp
             420                      425                  430
Leu Arg Asn Lys Thr Arg Leu Gly Ala Ala Val Pro Phe Asp Asp Asn
         435                      440                  445
Leu Asn Phe His Lys Val Ile Ala Val Ala Ile Ala Leu Gly Val Gly
    450                      455                  460
Ile His Gly Leu Ser His Leu Thr Cys Asp Phe Pro Arg Leu Leu Asn
465                      470                  475                      480
Ala Ser Glu Glu Glu Tyr Glu Pro Met Lys Tyr Tyr Phe Gly Asp Gln
             485                      490                  495
Pro Glu Ser Tyr Trp Trp Phe Ile Lys Gly Val Glu Gly Val Thr Gly
         500                      505                  510
Ile Ile Met Val Val Leu Met Ala Ile Ala Phe Thr Leu Ala Thr Pro
         515                      520                  525
Trp Phe Arg Arg Asn Arg Val Ser Leu Pro Lys Pro Phe His Lys Leu
    530                      535                  540
Thr Gly Xaa Asn Ala Phe Trp Tyr Ser His His Leu Phe Val Ile Val
545                      550                  555                      560
Tyr Thr Leu Phe Ile Val His Gly Glu Lys Leu Tyr Ile Thr Lys Asp
             565                      570                  575
Trp Tyr Lys Arg Thr Asp Met Asp Val Leu Leu Thr Ile Pro Ile Ile
         580                      585                  590
Leu Tyr Ala Ser Glu Arg Leu Ile Arg Ala Phe Arg Ser Ser Ile Lys
         595                      600                  605
Ala Val Lys Ile Leu Lys Val Ala Val Tyr Pro Gly Asn Val Leu Ala
    610                      615                  620
Leu His Met Ser Lys Pro Gln Gly Tyr Lys Tyr Lys Ser Gly Gln Tyr
625                      630                  635                      640
Met Phe Val Asn Cys Ala Ala Val Ser Pro Phe Glu Trp His Pro Phe
             645                      650                  655
Ser Ile Thr Ser Ala Pro Gly Asp Asp Tyr Leu Ser Val His Ile Arg
         660                      665                  670
```

```
Thr Leu Gly Asp Trp Thr Arg Gln Leu Lys Thr Val Phe Ser Glu Val
        675             680                 685
Cys Gln Pro Pro Pro Asn Gly Lys Ser Gly Leu Leu Arg Ala Asp Tyr
    690             695                 700
Leu Gln Gly Glu Asn Asn Pro Asn Phe Pro Arg Val Leu Ile Asp Gly
705             710                 715                 720
Pro Tyr Gly Ala Pro Ala Gln Asp Tyr Lys Lys Tyr Glu Val Val Leu
            725             730                 735
Leu Val Gly Leu Gly Ile Gly Ala Thr Pro Met Ile Ser Ile Val Lys
        740             745                 750
Asp Ile Val Asn Asn Met Lys Ala Met Asp Glu Glu Glu Asn Ser Leu
        755             760                 765
Glu Asp Gly His Asn Asn Asn Met Ala Pro Asn Ser Ser Pro Asn Ile
    770             775                 780
Ala Lys Asn Lys Gly Asn Lys Ser Gly Ser Ala Ser Gly Gly Asn Asn
785             790                 795                 800
Phe Asn Thr Arg Arg Ala Tyr Phe Tyr Trp Val Thr Arg Glu Gln Gly
            805             810                 815
Ser Phe Asp Trp Phe Lys Gly Ile Met Asn Glu Ala Ala Glu Met Asp
            820             825                 830
His Lys Gly Val Ile Glu Met His Asn Tyr Cys Thr Ser Val Tyr Glu
        835             840                 845
Glu Gly Asp Ala Arg Ser Ala Leu Ile Thr Met Leu Gln Ser Leu His
    850             855                 860
His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Thr Arg Val Lys Ser
865             870                 875                 880
His Phe Ala Lys Pro Asn Trp Arg Asn Val Tyr Lys Arg Ile Ala Leu
            885             890                 895
Asn His Pro Glu Ala Lys Val Gly Val Phe Tyr Cys Gly Ala Pro Ala
        900             905                 910
Leu Thr Lys Glu Leu Arg Gln His Ala Leu Asp Phe Ser His Lys Thr
    915             920                 925
Ser Thr Lys Phe Asp Phe His Lys Glu Asn Phe
    930             935
```

<210> 17
<211> 2532
<212> DNA
<213> Oryza sativa

<220>
<221> CDS
<222> (1)..(2529)
<223> coding for NADPH oxidase

<400> 17

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atg gcg tcg ccg tac gac cac cag tcg ccg cat gcg cag cac ccg tcg    48
Met Ala Ser Pro Tyr Asp His Gln Ser Pro His Ala Gln His Pro Ser
 1               5                   10                  15
ggg ttg ccg agg ccg ccg ggg gcg ggg gcg ggt gcg gcg gcg ggc ggg    96
Gly Leu Pro Arg Pro Pro Gly Ala Gly Ala Gly Ala Ala Ala Gly Gly
            20                  25                  30
ttc gcg cgg ggg ctg atg aag cag ccg tcg cgg ctg gcg tcc ggg gtg   144
Phe Ala Arg Gly Leu Met Lys Gln Pro Ser Arg Leu Ala Ser Gly Val
        35                  40                  45
agg cag ttc gcg tcg agg gtg tcg atg aag gtg ccg gag ggg gtg ggg   192
Arg Gln Phe Ala Ser Arg Val Ser Met Lys Val Pro Glu Gly Val Gly
    50                  55                  60
ggg atg cgg ccc ggt ggc ggg agg atg acg cgg atg cag tcc agc gcg   240
Gly Met Arg Pro Gly Gly Gly Arg Met Thr Arg Met Gln Ser Ser Ala
65                  70                  75                  80
```

```
cag gtg ggg ctc cgg ggg ctc cgc ttc ctc gac aag acg tcc ggc ggg    288
Gln Val Gly Leu Arg Gly Leu Arg Phe Leu Asp Lys Thr Ser Gly Gly
                85                      90                  95
aag gag ggg tgg aag tcc gtc gag cgc cgc ttc gac gag atg aac cgc    336
Lys Glu Gly Trp Lys Ser Val Glu Arg Arg Phe Asp Glu Met Asn Arg
                100                     105                 110
aac ggc cgc ctc ccc aag gag agc ttc ggc aag tgc atc ggc atg ggg    384
Asn Gly Arg Leu Pro Lys Glu Ser Phe Gly Lys Cys Ile Gly Met Gly
            115                     120                 125
gac tcc aag gag ttc gcc ggc gag ctg ttc gtg gcg ctg gcg cgg cgg    432
Asp Ser Lys Glu Phe Ala Gly Glu Leu Phe Val Ala Leu Ala Arg Arg
        130                     135                 140
agg aac ctg gag ccg gag gac ggc atc acc aag gag cag ctc aag gag    480
Arg Asn Leu Glu Pro Glu Asp Gly Ile Thr Lys Glu Gln Leu Lys Glu
145                     150                 155                 160
ttc tgg gag gag atg acc gac cag aac ttc gac tcg cgg ctt cgc att    528
Phe Trp Glu Glu Met Thr Asp Gln Asn Phe Asp Ser Arg Leu Arg Ile
                165                     170                 175
ttc ttt gac atg tgc gac aag aat ggc gat ggg atg ctc acg gaa gat    576
Phe Phe Asp Met Cys Asp Lys Asn Gly Asp Gly Met Leu Thr Glu Asp
                180                     185                 190
gag gtc aag gag gtt att ata ctg agt gcg tcg gcg aac aag ctg gcg    624
Glu Val Lys Glu Val Ile Ile Leu Ser Ala Ser Ala Asn Lys Leu Ala
            195                     200                 205
aag ctg aag gga cac gcg gcg acg tac gcg tcg ctg atc atg gag gag    672
Lys Leu Lys Gly His Ala Ala Thr Tyr Ala Ser Leu Ile Met Glu Glu
        210                     215                 220
ctg gac ccg gac gac cgc ggg tac atc gag atc tgg cag ctg gag acg    720
Leu Asp Pro Asp Asp Arg Gly Tyr Ile Glu Ile Trp Gln Leu Glu Thr
225                     230                 235                 240
ctg ctg cgc ggc atg gtg agc gcg cag gcg gcg ccg gag aag atg aag    768
Leu Leu Arg Gly Met Val Ser Ala Gln Ala Ala Pro Glu Lys Met Lys
                245                     250                 255
cgg acg acg tcg agc ctc gcg agg acg atg atc ccg tcg cgg tac cgg    816
Arg Thr Thr Ser Ser Leu Ala Arg Thr Met Ile Pro Ser Arg Tyr Arg
                260                     265                 270
agc ccg ctg aag cgg cac gtg tcc agg acg gtg gac ttc gtg cac gag    864
Ser Pro Leu Lys Arg His Val Ser Arg Thr Val Asp Phe Val His Glu
            275                     280                 285
aac tgg aag cgg atc tgg ctc gtc gcg ctg tgg ctc gcc gtc aac gtc    912
Asn Trp Lys Arg Ile Trp Leu Val Ala Leu Trp Leu Ala Val Asn Val
290                     295                 300
ggc ctc ttc gcc tac aag ttc gag cag tac gag cgg cgc gcc gcg ttc    960
Gly Leu Phe Ala Tyr Lys Phe Glu Gln Tyr Glu Arg Arg Ala Ala Phe
305                     310                 315                 320
cag gtg atg ggc cac tgc gtg tgc gtg gcc aag ggc gcc gcc gag gtg   1008
Gln Val Met Gly His Cys Val Cys Val Ala Lys Gly Ala Ala Glu Val
                325                     330                 335
ctc aag ctc aac atg gcg ctc atc ctc ctc ccc gtg tgc cgg aac acg   1056
Leu Lys Leu Asn Met Ala Leu Ile Leu Leu Pro Val Cys Arg Asn Thr
                340                     345                 350
ctc acc acg ctc agg tcc acg gcg ctc agc cac gtc atc ccc ttc gac   1104
Leu Thr Thr Leu Arg Ser Thr Ala Leu Ser His Val Ile Pro Phe Asp
            355                     360                 365
gac aac atc aac ttc cac aag gtg atc gcg gcg acc atc gcc gcc gcc   1152
Asp Asn Ile Asn Phe His Lys Val Ile Ala Ala Thr Ile Ala Ala Ala
        370                     375                 380
acc gcc gtc cac acg ctg gcg cac gtc acc tgc gac ttc ccg agg ctg   1200
Thr Ala Val His Thr Leu Ala His Val Thr Cys Asp Phe Pro Arg Leu
385                     390                 395                 400
atc aac tgc ccc agc gac aag ttc atg gcg acg ctg ggg ccg aac ttc   1248
```

```
Ile Asn Cys Pro Ser Asp Lys Phe Met Ala Thr Leu Gly Pro Asn Phe
                405             410                 415
ggg tac agg cag ccg acg tac gcc gac ctg ctg gag agc gcc ccc ggc   1296
Gly Tyr Arg Gln Pro Thr Tyr Ala Asp Leu Leu Glu Ser Ala Pro Gly
            420                 425                 430
gtc acc ggc atc ctc atg atc atc atc atg tcc ttc tcc ttc acg ctg   1344
Val Thr Gly Ile Leu Met Ile Ile Ile Met Ser Phe Ser Phe Thr Leu
        435                 440                 445
gcc acg cac tcc ttc cgc cgg agc gtc gtc aag ctg ccg tcg ccg ctg   1392
Ala Thr His Ser Phe Arg Arg Ser Val Val Lys Leu Pro Ser Pro Leu
    450                 455                 460
cac cac ctc gcc ggc ttc aac gcc ttc tgg tac gcg cac cac ctc ctg   1440
His His Leu Ala Gly Phe Asn Ala Phe Trp Tyr Ala His His Leu Leu
465                 470                 475                 480
gtg ctc gcc tac gtc ctc ctc gtc gtg cac tcc tac ttc ata ttc ctc   1488
Val Leu Ala Tyr Val Leu Leu Val Val His Ser Tyr Phe Ile Phe Leu
                485                 490                 495
acc agg gag tgg tac aag aaa acg aca tgg atg tac ctg ata gtc cca   1536
Thr Arg Glu Trp Tyr Lys Lys Thr Thr Trp Met Tyr Leu Ile Val Pro
                500                 505                 510
gtg ctc ttc tat gca tgc gag aga acg atc aga aaa gtt cga gag aac   1584
Val Leu Phe Tyr Ala Cys Glu Arg Thr Ile Arg Lys Val Arg Glu Asn
            515                 520                 525
aac tac cgc gtg agc atc gtc aag gca gcg att tac cca gga aat gtg   1632
Asn Tyr Arg Val Ser Ile Val Lys Ala Ala Ile Tyr Pro Gly Asn Val
        530                 535                 540
ctc tct ctt cac atg aag aag ccg ccg ggt ttc aag tac aag agc ggg   1680
Leu Ser Leu His Met Lys Lys Pro Pro Gly Phe Lys Tyr Lys Ser Gly
545                 550                 555                 560
atg tac ctg ttt gtg aag tgc cct gat gtc tct cct ttc gaa tgg cat   1728
Met Tyr Leu Phe Val Lys Cys Pro Asp Val Ser Pro Phe Glu Trp His
                565                 570                 575
ccc ttc tcc atc act tct gca cct gga gat gac tac ctg agt gtg cat   1776
Pro Phe Ser Ile Thr Ser Ala Pro Gly Asp Asp Tyr Leu Ser Val His
                580                 585                 590
atc cgt aca cta ggt gac tgg acg act gaa ctc aga aac ctg ttt ggg   1824
Ile Arg Thr Leu Gly Asp Trp Thr Thr Glu Leu Arg Asn Leu Phe Gly
            595                 600                 605
aag gct tgc gag gca cag gtt act tct aag aag gct acc ctt tca aga   1872
Lys Ala Cys Glu Ala Gln Val Thr Ser Lys Lys Ala Thr Leu Ser Arg
    610                 615                 620
ctt gaa act aca gtt gtg gcg gac gct cag aca gag gat act agg ttt   1920
Leu Glu Thr Thr Val Val Ala Asp Ala Gln Thr Glu Asp Thr Arg Phe
625                 630                 635                 640
cct aag gtc ctt att gat ggg ccc tat ggt gca ccg gcg caa aac tac   1968
Pro Lys Val Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln Asn Tyr
                645                 650                 655
aag aag tat gac att ctt ttg ctt att ggt ctt gga att ggt gct act   2016
Lys Lys Tyr Asp Ile Leu Leu Leu Ile Gly Leu Gly Ile Gly Ala Thr
                660                 665                 670
cct ttc atc agc att ctg aag gat ctg ttg aac aac att aaa tcc aac   2064
Pro Phe Ile Ser Ile Leu Lys Asp Leu Leu Asn Asn Ile Lys Ser Asn
                675                 680                 685
gaa gag gtg gaa agc ata cat ggt tct gag ata ggc agc ttc aag aac   2112
Glu Glu Val Glu Ser Ile His Gly Ser Glu Ile Gly Ser Phe Lys Asn
                690                 695                 700
aat ggg cca gga aga gct tac ttc tac tgg gtg acc aga gag caa ggg   2160
Asn Gly Pro Gly Arg Ala Tyr Phe Tyr Trp Val Thr Arg Glu Gln Gly
705                 710                 715                 720
tcc ttc gag tgg ttt aaa gga gtc atg aac gat gtc gct gaa agt gat   2208
Ser Phe Glu Trp Phe Lys Gly Val Met Asn Asp Val Ala Glu Ser Asp
```

```
                725                   730                   735
cac aat aat att ata gag atg cac aat tac ctg acc agc gtg tat gaa   2256
His Asn Asn Ile Ile Glu Met His Asn Tyr Leu Thr Ser Val Tyr Glu
            740                   745                   750
gaa ggc gac gca agg tca gct ttg att gcc atg gtt cag tca ctt caa   2304
Glu Gly Asp Ala Arg Ser Ala Leu Ile Ala Met Val Gln Ser Leu Gln
            755                   760                   765
cat gcc aaa aat ggt gtg gat atc gtc tcc ggc agc agg att cgc aca   2352
His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Ser Arg Ile Arg Thr
            770                   775                   780
cat ttt gcg agg cct aac tgg aga aag gtg ttc tct gac ttg gcg aat   2400
His Phe Ala Arg Pro Asn Trp Arg Lys Val Phe Ser Asp Leu Ala Asn
785                   790                   795                   800
gcc cac aaa aac tca cgc ata ggt gtt ttc tat tgt gga tcc cct aca   2448
Ala His Lys Asn Ser Arg Ile Gly Val Phe Tyr Cys Gly Ser Pro Thr
                805                   810                   815
ctc acg aaa caa ctc aag gat ctt tca aaa gaa ttc agc cag aca acc   2496
Leu Thr Lys Gln Leu Lys Asp Leu Ser Lys Glu Phe Ser Gln Thr Thr
                820                   825                   830
aca act aga ttc cac ttc cac aag gaa aac ttt taa                   2532
Thr Thr Arg Phe His Phe His Lys Glu Asn Phe
                835                   840
```

```
<210> 18
<211> 843
<212> PRT
<213> Oryza sativa

<400> 18
Met Ala Ser Pro Tyr Asp His Gln Ser Pro His Ala Gln His Pro Ser
1                   5                   10                  15
Gly Leu Pro Arg Pro Pro Gly Ala Gly Ala Gly Ala Ala Ala Gly Gly
            20                  25                  30
Phe Ala Arg Gly Leu Met Lys Gln Pro Ser Arg Leu Ala Ser Gly Val
            35                  40                  45
Arg Gln Phe Ala Ser Arg Val Ser Met Lys Val Pro Glu Gly Val Gly
    50                  55                  60
Gly Met Arg Pro Gly Gly Gly Arg Met Thr Arg Met Gln Ser Ser Ala
65                  70                  75                  80
Gln Val Gly Leu Arg Gly Leu Arg Phe Leu Asp Lys Thr Ser Gly Gly
            85                  90                  95
Lys Glu Gly Trp Lys Ser Val Glu Arg Arg Phe Asp Glu Met Asn Arg
            100                 105                 110
Asn Gly Arg Leu Pro Lys Glu Ser Phe Gly Lys Cys Ile Gly Met Gly
            115                 120                 125
Asp Ser Lys Glu Phe Ala Gly Glu Leu Phe Val Ala Leu Ala Arg Arg
    130                 135                 140
Arg Asn Leu Glu Pro Glu Asp Gly Ile Thr Lys Glu Gln Leu Lys Glu
145                 150                 155                 160
Phe Trp Glu Glu Met Thr Asp Gln Asn Phe Asp Ser Arg Leu Arg Ile
                165                 170                 175
Phe Phe Asp Met Cys Asp Lys Asn Gly Asp Gly Met Leu Thr Glu Asp
            180                 185                 190
Glu Val Lys Glu Val Ile Ile Leu Ser Ala Ser Ala Asn Lys Leu Ala
            195                 200                 205
Lys Leu Lys Gly His Ala Ala Thr Tyr Ala Ser Leu Ile Met Glu Glu
    210                 215                 220
Leu Asp Pro Asp Asp Arg Gly Tyr Ile Glu Ile Trp Gln Leu Glu Thr
225                 230                 235                 240
Leu Leu Arg Gly Met Val Ser Ala Gln Ala Ala Pro Glu Lys Met Lys
                245                 250                 255
```

```
Arg Thr Thr Ser Ser Leu Ala Arg Thr Met Ile Pro Ser Arg Tyr Arg
        260                 265             270
Ser Pro Leu Lys Arg His Val Ser Arg Thr Val Asp Phe Val His Glu
        275                 280             285
Asn Trp Lys Arg Ile Trp Leu Val Ala Leu Trp Leu Ala Val Asn Val
        290                 295             300
Gly Leu Phe Ala Tyr Lys Phe Glu Gln Tyr Glu Arg Arg Ala Ala Phe
305                 310             315                     320
Gln Val Met Gly His Cys Val Cys Val Ala Lys Gly Ala Ala Glu Val
            325                 330                 335
Leu Lys Leu Asn Met Ala Leu Ile Leu Leu Pro Val Cys Arg Asn Thr
        340                 345                 350
Leu Thr Thr Leu Arg Ser Thr Ala Leu Ser His Val Ile Pro Phe Asp
        355                 360                 365
Asp Asn Ile Asn Phe His Lys Val Ile Ala Ala Thr Ile Ala Ala Ala
370                 375                 380
Thr Ala Val His Thr Leu Ala His Val Thr Cys Asp Phe Pro Arg Leu
385                 390                 395                     400
Ile Asn Cys Pro Ser Asp Lys Phe Met Ala Thr Leu Gly Pro Asn Phe
                405                 410                 415
Gly Tyr Arg Gln Pro Thr Tyr Ala Asp Leu Leu Glu Ser Ala Pro Gly
            420                 425                 430
Val Thr Gly Ile Leu Met Ile Ile Ile Met Ser Phe Ser Phe Thr Leu
            435                 440                 445
Ala Thr His Ser Phe Arg Arg Ser Val Val Lys Leu Pro Ser Pro Leu
        450                 455                 460
His His Leu Ala Gly Phe Asn Ala Phe Trp Tyr Ala His His Leu Leu
465                 470                 475                     480
Val Leu Ala Tyr Val Leu Leu Val Val His Ser Tyr Phe Ile Phe Leu
                485                 490                 495
Thr Arg Glu Trp Tyr Lys Lys Thr Thr Trp Met Tyr Leu Ile Val Pro
            500                 505                 510
Val Leu Phe Tyr Ala Cys Glu Arg Thr Ile Arg Lys Val Arg Glu Asn
        515                 520                 525
Asn Tyr Arg Val Ser Ile Val Lys Ala Ala Ile Tyr Pro Gly Asn Val
        530                 535                 540
Leu Ser Leu His Met Lys Lys Pro Pro Gly Phe Lys Tyr Lys Ser Gly
545                 550                 555                     560
Met Tyr Leu Phe Val Lys Cys Pro Asp Val Ser Pro Phe Glu Trp His
                565                 570                 575
Pro Phe Ser Ile Thr Ser Ala Pro Gly Asp Asp Tyr Leu Ser Val His
                580                 585                 590
Ile Arg Thr Leu Gly Asp Trp Thr Thr Glu Leu Arg Asn Leu Phe Gly
            595                 600                 605
Lys Ala Cys Glu Ala Gln Val Thr Ser Lys Lys Ala Thr Leu Ser Arg
        610                 615                 620
Leu Glu Thr Thr Val Val Ala Asp Ala Gln Thr Glu Asp Thr Arg Phe
625                 630                 635                     640
Pro Lys Val Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln Asn Tyr
                645                 650                 655
Lys Lys Tyr Asp Ile Leu Leu Leu Ile Gly Leu Gly Ile Gly Ala Thr
            660                 665                 670
Pro Phe Ile Ser Ile Leu Lys Asp Leu Leu Asn Asn Ile Lys Ser Asn
            675                 680                 685
Glu Glu Val Glu Ser Ile His Gly Ser Glu Ile Gly Ser Phe Lys Asn
        690                 695                 700
Asn Gly Pro Gly Arg Ala Tyr Phe Tyr Trp Val Thr Arg Glu Gln Gly
705                 710                 715                     720
Ser Phe Glu Trp Phe Lys Gly Val Met Asn Asp Val Ala Glu Ser Asp
                725                 730                 735
His Asn Asn Ile Ile Glu Met His Asn Tyr Leu Thr Ser Val Tyr Glu
```

```
                740                      745                   750
Glu Gly Asp Ala Arg Ser Ala Leu Ile Ala Met Val Gln Ser Leu Gln
            755                   760                   765
His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Ser Arg Ile Arg Thr
        770                   775                   780
His Phe Ala Arg Pro Asn Trp Arg Lys Val Phe Ser Asp Leu Ala Asn
785                   790                   795                   800
Ala His Lys Asn Ser Arg Ile Gly Val Phe Tyr Cys Gly Ser Pro Thr
                805                   810                   815
Leu Thr Lys Gln Leu Lys Asp Leu Ser Lys Glu Phe Ser Gln Thr Thr
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Thr Thr Arg Phe His Phe His Lys Glu Asn Phe
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gaa gcc gga aac agc gga cca atg agc ggt ggt caa tta cca ccg atc    96
Glu Ala Gly Asn Ser Gly Pro Met Ser Gly Gly Gln Leu Pro Pro Ile
            20                  25                  30
tat aaa aaa ccg ggg aac tcc aga ttc act gct gag aac agt cag aga   144
Tyr Lys Lys Pro Gly Asn Ser Arg Phe Thr Ala Glu Asn Ser Gln Arg
        35                  40                  45
aca cgt acg gca cca tac gtg gac ctc acg gta gat gta caa gac gat   192
Thr Arg Thr Ala Pro Tyr Val Asp Leu Thr Val Asp Val Gln Asp Asp
    50                  55                  60
aca gtc tct gta cat agc ttg aaa atg gaa ggt gga tct agc gtt gaa   240
Thr Val Ser Val His Ser Leu Lys Met Glu Gly Gly Ser Ser Val Glu
65                  70                  75                  80
gag agt ccg gag ctt act ttg ctg aaa cga aac cgt ctt gag aag aaa   288
Glu Ser Pro Glu Leu Thr Leu Leu Lys Arg Asn Arg Leu Glu Lys Lys
                85                  90                  95
aca acg gtg gtg aaa cgt ttg gcg tct gtt tct cac gag ctt aag cgt   336
Thr Thr Val Val Lys Arg Leu Ala Ser Val Ser His Glu Leu Lys Arg
            100                 105                 110
ttg aca tct gtt tct ggt ggt att ggt gga aga aag ccg cct cga ccg   384
Leu Thr Ser Val Ser Gly Gly Ile Gly Gly Arg Lys Pro Pro Arg Pro
        115                 120                 125
gct aag tta gac cgg act aaa tcc gcc gcg agt caa gcg ttg aag gga   432
Ala Lys Leu Asp Arg Thr Lys Ser Ala Ala Ser Gln Ala Leu Lys Gly
    130                 135                 140
ctt aag ttc att agt aaa acc gac ggt ggc gcc ggt tgg tct gcc gtg   480
Leu Lys Phe Ile Ser Lys Thr Asp Gly Gly Ala Gly Trp Ser Ala Val
145                 150                 155                 160
gag aag cgg ttt aat cag att acc gcg act acc ggt gga cta ctt ctt   528
Glu Lys Arg Phe Asn Gln Ile Thr Ala Thr Thr Gly Gly Leu Leu Leu
                165                 170                 175
cgg aca aag ttc ggt gaa tgc ata gga atg act tca aag gat ttt gct   576
Arg Thr Lys Phe Gly Glu Cys Ile Gly Met Thr Ser Lys Asp Phe Ala
            180                 185                 190
```

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ttg gaa ctg ttt gat gca ttg gct aga aga agg aat ata aca ggg gaa   624
Leu Glu Leu Phe Asp Ala Leu Ala Arg Arg Arg Asn Ile Thr Gly Glu
        195             200                 205
gtg att gat gga gat caa cta aag gag ttt tgg gaa caa att aat gat   672
Val Ile Asp Gly Asp Gln Leu Lys Glu Phe Trp Glu Gln Ile Asn Asp
        210             215                 220
caa agt ttt gat tct cgg ctt aag aca ttc ttt gac atg gtg gat aaa   720
Gln Ser Phe Asp Ser Arg Leu Lys Thr Phe Phe Asp Met Val Asp Lys
225             230                 235                 240
gat gct gat ggt aga ctt aca gaa gac gaa gtt aga gag ttg gag agt   768
Asp Ala Asp Gly Arg Leu Thr Glu Asp Glu Val Arg Glu Leu Glu Ser
                245                 250                 255
ctt gag act ctg ctt ttg caa gcg gca aca cag tct gtg ata aca agt   816
Leu Glu Thr Leu Leu Leu Gln Ala Ala Thr Gln Ser Val Ile Thr Ser
                260                 265                 270
act ggg gag aga aag aat ctg agt cat atg atg agt cag agg ctt aag   864
Thr Gly Glu Arg Lys Asn Leu Ser His Met Met Ser Gln Arg Leu Lys
        275                 280                 285
cct acg ttt aac cgc aac ccg ttg aag cga tgg tac cgt ggt ctt aga   912
Pro Thr Phe Asn Arg Asn Pro Leu Lys Arg Trp Tyr Arg Gly Leu Arg
        290                 295                 300
ttc ttc ttg tta gac aac tgg caa aga tgt tgg gtt ata gtg cta tgg   960
Phe Phe Leu Leu Asp Asn Trp Gln Arg Cys Trp Val Ile Val Leu Trp
305             310                 315                 320
ttc ata gtt atg gct ata ctc ttc acc tac aaa tat atc caa tac agg   1008
Phe Ile Val Met Ala Ile Leu Phe Thr Tyr Lys Tyr Ile Gln Tyr Arg
                325                 330                 335
cgt agc cct gtg tat cca gtg atg ggt gat tgt gtg tgc atg gct aaa   1056
Arg Ser Pro Val Tyr Pro Val Met Gly Asp Cys Val Cys Met Ala Lys
                340                 345                 350
ggt gct gca gaa aca gtg aag ctg aac atg gct ttg att ctc tta cct   1104
Gly Ala Ala Glu Thr Val Lys Leu Asn Met Ala Leu Ile Leu Leu Pro
        355                 360                 365
gtt tgt aga aac acc atc aca tgg ctt aga aat aag acc agg ttg ggt   1152
Val Cys Arg Asn Thr Ile Thr Trp Leu Arg Asn Lys Thr Arg Leu Gly
        370                 375                 380
cgt gtt gtc cca ttt gat gac aat ctc aac ttc cac aag gtt ata gcg   1200
Arg Val Val Pro Phe Asp Asp Asn Leu Asn Phe His Lys Val Ile Ala
385             390                 395                 400
gtg ggg att ata gtt gga gta acg atg cac gcc ggg gca cat tta gcg   1248
Val Gly Ile Ile Val Gly Val Thr Met His Ala Gly Ala His Leu Ala
                405                 410                 415
tgt gat ttc ccg cgg tta cta cat gca act cca gag gca tat agg cct   1296
Cys Asp Phe Pro Arg Leu Leu His Ala Thr Pro Glu Ala Tyr Arg Pro
                420                 425                 430
tta aga cag ttt ttt ggg gat gag caa cca aag agc tac tgg cat ttt   1344
Leu Arg Gln Phe Phe Gly Asp Glu Gln Pro Lys Ser Tyr Trp His Phe
        435                 440                 445
gta aac tcg gta gaa ggt ata acc gga ctt gtg atg gtt ttg tta atg   1392
Val Asn Ser Val Glu Gly Ile Thr Gly Leu Val Met Val Leu Leu Met
        450                 455                 460
gcg att gca ttc aca cta gcc acg cct tgg ttc aga aga ggg aag cta   1440
Ala Ile Ala Phe Thr Leu Ala Thr Pro Trp Phe Arg Arg Gly Lys Leu
465             470                 475                 480
aac tat ctt cca gga cca tta aag aaa cta gct agc ttc aat gcc ttc   1488
Asn Tyr Leu Pro Gly Pro Leu Lys Lys Leu Ala Ser Phe Asn Ala Phe
                485                 490                 495
tgg tac act cat cat ttg ttt gtc ata gtc tac att ctt ctt gtt gct   1536
Trp Tyr Thr His His Leu Phe Val Ile Val Tyr Ile Leu Leu Val Ala
                500                 505                 510
cat gga tac tac ttg tat ctc acc aga gac tgg cac aat aaa acg act   1584
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    His Gly Tyr Tyr Leu Tyr Leu Thr Arg Asp Trp His Asn Lys Thr Thr
            515             520             525
tgg atg tat ttg gtg gta cca gtg gtt cta tac gcg tgt gaa agg ttg      1632
Trp Met Tyr Leu Val Val Pro Val Val Leu Tyr Ala Cys Glu Arg Leu
        530             535             540
ata aga gca ttc agg tcg agc atc aag gcg gtg act att agg aaa gta      1680
Ile Arg Ala Phe Arg Ser Ser Ile Lys Ala Val Thr Ile Arg Lys Val
545             550             555             560
gca gtt tat cca gga aac gtg ctg gca att cac ttg tca agg cct caa      1728
Ala Val Tyr Pro Gly Asn Val Leu Ala Ile His Leu Ser Arg Pro Gln
            565             570             575
aac ttc aaa tac aag agt ggt caa tac atg ttt gtt aac tgt gct gct      1776
Asn Phe Lys Tyr Lys Ser Gly Gln Tyr Met Phe Val Asn Cys Ala Ala
        580             585             590
gtt tct cca ttt gaa tgg cat cca ttt tca atc aca tct gca cca caa      1824
Val Ser Pro Phe Glu Trp His Pro Phe Ser Ile Thr Ser Ala Pro Gln
        595             600             605
gat gat tac cta agt gtt cac att aga gtt ctt ggg gat tgg aca cga      1872
Asp Asp Tyr Leu Ser Val His Ile Arg Val Leu Gly Asp Trp Thr Arg
        610             615             620
gct ctc aaa gga gtc ttc tct gag gtg tgt aag cca cca ccg gca gga      1920
Ala Leu Lys Gly Val Phe Ser Glu Val Cys Lys Pro Pro Pro Ala Gly
625             630             635             640
gtt agt ggt ctg ctt aga gcc gac atg ttg cat ggt gca aat aat ccc      1968
Val Ser Gly Leu Leu Arg Ala Asp Met Leu His Gly Ala Asn Asn Pro
            645             650             655
gac ttc ccg aaa gtc ttg att gat ggt cca tat ggt gca cca gca caa      2016
Asp Phe Pro Lys Val Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln
            660             665             670
gac tac aag aag tac gag gtg gtt cta cta gtt ggt ctc ggg att gga      2064
Asp Tyr Lys Lys Tyr Glu Val Val Leu Leu Val Gly Leu Gly Ile Gly
            675             680             685
gcc aca cca atg atc agt atc gtc aaa gac att gtt aat aac atc aag      2112
Ala Thr Pro Met Ile Ser Ile Val Lys Asp Ile Val Asn Asn Ile Lys
        690             695             700
gcc aag gaa caa gcc caa cta aac cga atg gag aat gga aca agc gaa      2160
Ala Lys Glu Gln Ala Gln Leu Asn Arg Met Glu Asn Gly Thr Ser Glu
705             710             715             720
cca caa cga agt aag aaa gag agt ttc agg acc cgt aga gct tac ttc      2208
Pro Gln Arg Ser Lys Lys Glu Ser Phe Arg Thr Arg Arg Ala Tyr Phe
            725             730             735
tat tgg gtt acg cgt gag caa ggc tct ttc gat tgg ttc aag aac ata      2256
Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Asn Ile
            740             745             750
atg aac gaa gtc gcg gaa cga gat gcc aac cgc gtc atc gaa atg cat      2304
Met Asn Glu Val Ala Glu Arg Asp Ala Asn Arg Val Ile Glu Met His
            755             760             765
aac tat tgt aca agt gtc tat gaa gaa ggt gac gct cgt tcc gca ctt      2352
Asn Tyr Cys Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu
            770             775             780
ata cat atg ctt caa tca cta aac cat gca aag aac ggc gtc gac att      2400
Ile His Met Leu Gln Ser Leu Asn His Ala Lys Asn Gly Val Asp Ile
785             790             795             800
gtc tct gga aca aga gtt atg tcc cat ttc gct aaa cct aat tgg aga      2448
Val Ser Gly Thr Arg Val Met Ser His Phe Ala Lys Pro Asn Trp Arg
            805             810             815
aat gtt tac aag cgt ata gct atg gat cat cct aac acc aaa gtt gga      2496
Asn Val Tyr Lys Arg Ile Ala Met Asp His Pro Asn Thr Lys Val Gly
            820             825             830
gtg ttt tac tgt gga gca cca gca ttg aca aag gag cta agg cat cta      2544
Val Phe Tyr Cys Gly Ala Pro Ala Leu Thr Lys Glu Leu Arg His Leu
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          835                    840                    845
gct tta gat ttc acc cac aaa aca agc acc aga ttc tcc ttc cac aaa    2592
Ala Leu Asp Phe Thr His Lys Thr Ser Thr Arg Phe Ser Phe His Lys
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gag aat ttc taa                                                     2604
Glu Asn Phe
865


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        35                  40                  45
Thr Arg Thr Ala Pro Tyr Val Asp Leu Thr Val Asp Val Gln Asp Asp
    50                  55                  60
Thr Val Ser Val His Ser Leu Lys Met Glu Gly Gly Ser Ser Val Glu
65                  70                  75                  80
Glu Ser Pro Glu Leu Thr Leu Leu Lys Arg Asn Arg Leu Glu Lys Lys
                85                  90                  95
Thr Thr Val Val Lys Arg Leu Ala Ser Val Ser His Glu Leu Lys Arg
            100                 105                 110
Leu Thr Ser Val Ser Gly Gly Ile Gly Gly Arg Lys Pro Pro Arg Pro
            115                 120                 125
Ala Lys Leu Asp Arg Thr Lys Ser Ala Ala Ser Gln Ala Leu Lys Gly
    130                 135                 140
Leu Lys Phe Ile Ser Lys Thr Asp Gly Gly Ala Gly Trp Ser Ala Val
145                 150                 155                 160
Glu Lys Arg Phe Asn Gln Ile Thr Ala Thr Thr Gly Gly Leu Leu Leu
                165                 170                 175
Arg Thr Lys Phe Gly Glu Cys Ile Gly Met Thr Ser Lys Asp Phe Ala
                180                 185                 190
Leu Glu Leu Phe Asp Ala Leu Ala Arg Arg Arg Asn Ile Thr Gly Glu
            195                 200                 205
Val Ile Asp Gly Asp Gln Leu Lys Glu Phe Trp Glu Gln Ile Asn Asp
    210                 215                 220
Gln Ser Phe Asp Ser Arg Leu Lys Thr Phe Phe Asp Met Val Asp Lys
225                 230                 235                 240
Asp Ala Asp Gly Arg Leu Thr Glu Asp Glu Val Arg Glu Leu Glu Ser
                245                 250                 255
Leu Glu Thr Leu Leu Leu Gln Ala Ala Thr Gln Ser Val Ile Thr Ser
                260                 265                 270
Thr Gly Glu Arg Lys Asn Leu Ser His Met Met Ser Gln Arg Leu Lys
            275                 280                 285
Pro Thr Phe Asn Arg Asn Pro Leu Lys Arg Trp Tyr Arg Gly Leu Arg
    290                 295                 300
Phe Phe Leu Leu Asp Asn Trp Gln Arg Cys Trp Val Ile Val Leu Trp
305                 310                 315                 320
Phe Ile Val Met Ala Ile Leu Phe Thr Tyr Lys Tyr Ile Gln Tyr Arg
                325                 330                 335
Arg Ser Pro Val Tyr Pro Val Met Gly Asp Cys Val Cys Met Ala Lys
                340                 345                 350
Gly Ala Ala Glu Thr Val Lys Leu Asn Met Ala Leu Ile Leu Leu Pro
            355                 360                 365
Val Cys Arg Asn Thr Ile Thr Trp Leu Arg Asn Lys Thr Arg Leu Gly
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Arg Val Val Pro Phe Asp Asp Asn Leu Asn Phe His Lys Val Ile Ala
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Val Gly Ile Ile Val Gly Val Thr Met His Ala Gly Ala His Leu Ala
                        405                     410                     415
Cys Asp Phe Pro Arg Leu Leu His Ala Thr Pro Glu Ala Tyr Arg Pro
                420                     425                     430
Leu Arg Gln Phe Phe Gly Asp Glu Gln Pro Lys Ser Tyr Trp His Phe
            435                     440                     445
Val Asn Ser Val Glu Gly Ile Thr Gly Leu Val Met Val Leu Leu Met
        450                     455                     460
Ala Ile Ala Phe Thr Leu Ala Thr Pro Trp Phe Arg Arg Gly Lys Leu
465                     470                     475                     480
Asn Tyr Leu Pro Gly Pro Leu Lys Lys Leu Ala Ser Phe Asn Ala Phe
                485                     490                     495
Trp Tyr Thr His His Leu Phe Val Ile Val Tyr Ile Leu Leu Val Ala
                500                     505                     510
His Gly Tyr Tyr Leu Tyr Leu Thr Arg Asp Trp His Asn Lys Thr Thr
            515                     520                     525
Trp Met Tyr Leu Val Val Pro Val Val Leu Tyr Ala Cys Glu Arg Leu
        530                     535                     540
Ile Arg Ala Phe Arg Ser Ser Ile Lys Ala Val Thr Ile Arg Lys Val
545                     550                     555                     560
Ala Val Tyr Pro Gly Asn Val Leu Ala Ile His Leu Ser Arg Pro Gln
                565                     570                     575
Asn Phe Lys Tyr Lys Ser Gly Gln Tyr Met Phe Val Asn Cys Ala Ala
            580                     585                     590
Val Ser Pro Phe Glu Trp His Pro Phe Ser Ile Thr Ser Ala Pro Gln
            595                     600                     605
Asp Asp Tyr Leu Ser Val His Ile Arg Val Leu Gly Asp Trp Thr Arg
        610                     615                     620
Ala Leu Lys Gly Val Phe Ser Glu Val Cys Lys Pro Pro Pro Ala Gly
625                     630                     635                     640
Val Ser Gly Leu Leu Arg Ala Asp Met Leu His Gly Ala Asn Asn Pro
                645                     650                     655
Asp Phe Pro Lys Val Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln
                660                     665                     670
Asp Tyr Lys Lys Tyr Glu Val Val Leu Leu Val Gly Leu Gly Ile Gly
            675                     680                     685
Ala Thr Pro Met Ile Ser Ile Val Lys Asp Ile Val Asn Asn Ile Lys
        690                     695                     700
Ala Lys Glu Gln Ala Gln Leu Asn Arg Met Glu Asn Gly Thr Ser Glu
705                     710                     715                     720
Pro Gln Arg Ser Lys Lys Glu Ser Phe Arg Thr Arg Arg Ala Tyr Phe
                725                     730                     735
Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Asn Ile
            740                     745                     750
Met Asn Glu Val Ala Glu Arg Asp Ala Asn Arg Val Ile Glu Met His
            755                     760                     765
Asn Tyr Cys Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu
        770                     775                     780
Ile His Met Leu Gln Ser Leu Asn His Ala Lys Asn Gly Val Asp Ile
785                     790                     795                     800
Val Ser Gly Thr Arg Val Met Ser His Phe Ala Lys Pro Asn Trp Arg
            805                     810                     815
Asn Val Tyr Lys Arg Ile Ala Met Asp His Pro Asn Thr Lys Val Gly
            820                     825                     830
Val Phe Tyr Cys Gly Ala Pro Ala Leu Thr Lys Glu Leu Arg His Leu
        835                     840                     845
Ala Leu Asp Phe Thr His Lys Thr Ser Thr Arg Phe Ser Phe His Lys
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Glu Asn Phe
865

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<223> coding for NADPH oxidase

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tac tac aca gag tcg ccg tac aac aga gga gag tcc tcg gcg aac gtg   96
Tyr Tyr Thr Glu Ser Pro Tyr Asn Arg Gly Glu Ser Ser Ala Asn Val
                20   25   30
gcg acg aca agc aac tat tac ggt gaa gat gaa cca tac gtg gag atc   144
Ala Thr Thr Ser Asn Tyr Tyr Gly Glu Asp Glu Pro Tyr Val Glu Ile
            35   40   45
acg cta gat atc cac gac gat tcc gtc tcc gtg tac ggc ttg aag tca   192
Thr Leu Asp Ile His Asp Asp Ser Val Ser Val Tyr Gly Leu Lys Ser
        50   55   60
ccg aac cat cga ggg gcc ggg tct aat tat gag gat caa tcg ctt ctc   240
Pro Asn His Arg Gly Ala Gly Ser Asn Tyr Glu Asp Gln Ser Leu Leu
 65   70   75   80
aga caa ggt cgt tca ggg agg agt aac tcg gta ttg aaa cgc ttg gct   288
Arg Gln Gly Arg Ser Gly Arg Ser Asn Ser Val Leu Lys Arg Leu Ala
                85   90   95
tct tct gtt tcc acc gga ata aca cga gtt gct tct tct gtt tct tcg   336
Ser Ser Val Ser Thr Gly Ile Thr Arg Val Ala Ser Ser Val Ser Ser
            100   105   110
tct tcc gcg aga aaa cca ccg cgg ccg cag ctg gct aag ctg cgc cgt   384
Ser Ser Ala Arg Lys Pro Pro Arg Pro Gln Leu Ala Lys Leu Arg Arg
        115   120   125
tcg aaa tct aga gca gag cta gct ctc aaa ggt ctt aaa ttc atc acc   432
Ser Lys Ser Arg Ala Glu Leu Ala Leu Lys Gly Leu Lys Phe Ile Thr
    130   135   140
aag act gat ggt gtc act ggt tgg cct gaa gtt gag aaa cgg ttt tat   480
Lys Thr Asp Gly Val Thr Gly Trp Pro Glu Val Glu Lys Arg Phe Tyr
145   150   155   160
gtg atg aca atg act aat aac gga tta tta cac cga tcc aga ttc ggt   528
Val Met Thr Met Thr Asn Asn Gly Leu Leu His Arg Ser Arg Phe Gly
                165   170   175
gaa tgt ata ggg atg aaa tcg acg gag ttt gcg ttg gca ttg ttc gat   576
Glu Cys Ile Gly Met Lys Ser Thr Glu Phe Ala Leu Ala Leu Phe Asp
            180   185   190
gct tta gcg agg agg gaa aac gta agc gga gat tca ata aac atg aat   624
Ala Leu Ala Arg Arg Glu Asn Val Ser Gly Asp Ser Ile Asn Met Asn
        195   200   205
gag ctt aaa gag ttc tgg aag cag atc act gat caa gat ttt gat tca   672
Glu Leu Lys Glu Phe Trp Lys Gln Ile Thr Asp Gln Asp Phe Asp Ser
    210   215   220
agg cta cga act ttc ttc gcc atg gtc gat aag gat tcg gat ggg cgg   720
Arg Leu Arg Thr Phe Phe Ala Met Val Asp Lys Asp Ser Asp Gly Arg
225   230   235   240
ttg aat gaa gcc gaa gta aga gag att ata act tta agt gct tct gca   768
Leu Asn Glu Ala Glu Val Arg Glu Ile Ile Thr Leu Ser Ala Ser Ala

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                    245                     250                     255
aac gag ttg gat aac att cgg aga caa gct gat gaa tat gct gct ttg      816
Asn Glu Leu Asp Asn Ile Arg Arg Gln Ala Asp Glu Tyr Ala Ala Leu
                260                     265                     270
att atg gaa gaa ctc gat cct tat cat tat gga tac atc atg ata gag      864
Ile Met Glu Glu Leu Asp Pro Tyr His Tyr Gly Tyr Ile Met Ile Glu
                275                     280                     285
aat ctc gag ata ctt cta ttg caa gcg ccg atg cag gat gtg aga gat      912
Asn Leu Glu Ile Leu Leu Leu Gln Ala Pro Met Gln Asp Val Arg Asp
                290                     295                     300
gga gag agt aag aag cta agc aag atg cta agt cag aat ctc atg gtt      960
Gly Glu Ser Lys Lys Leu Ser Lys Met Leu Ser Gln Asn Leu Met Val
305                     310                     315                     320
ccg cag agt agg aat ctc ggg gca cgt ttt tgc aga ggg atg aag tat     1008
Pro Gln Ser Arg Asn Leu Gly Ala Arg Phe Cys Arg Gly Met Lys Tyr
                325                     330                     335
ttt ttg ttt gat aat tgg aag aga gtg tgg gtg atg gct cta tgg ata     1056
Phe Leu Phe Asp Asn Trp Lys Arg Val Trp Val Met Ala Leu Trp Ile
                340                     345                     350
ggt gct atg gcg ggt ttg ttc acg tgg aag ttt atg gag tat cga aaa     1104
Gly Ala Met Ala Gly Leu Phe Thr Trp Lys Phe Met Glu Tyr Arg Lys
                355                     360                     365
aga tcc gct tac gaa gtc atg gga gtt tgt gtt tgt ata gct aaa gga     1152
Arg Ser Ala Tyr Glu Val Met Gly Val Cys Val Cys Ile Ala Lys Gly
                370                     375                     380
gct gca gag acg ctt aaa cta aac atg gct atg att ttg tta cca gtt     1200
Ala Ala Glu Thr Leu Lys Leu Asn Met Ala Met Ile Leu Leu Pro Val
385                     390                     395                     400
tgt agg aac acc atc act tgg ctg cgg acc aaa acc aag tta agt gct     1248
Cys Arg Asn Thr Ile Thr Trp Leu Arg Thr Lys Thr Lys Leu Ser Ala
                405                     410                     415
att gtt cct ttc gat gac agc ctc aat ttt cac aag gtc ata gct ata     1296
Ile Val Pro Phe Asp Asp Ser Leu Asn Phe His Lys Val Ile Ala Ile
                420                     425                     430
gga att tca gtt gga gtt gga atc cat gct aca tct cac tta gca tgt     1344
Gly Ile Ser Val Gly Val Gly Ile His Ala Thr Ser His Leu Ala Cys
                435                     440                     445
gat ttc ccc cga ctg ata gct gca gac gaa gat cag tat gag cca atg     1392
Asp Phe Pro Arg Leu Ile Ala Ala Asp Glu Asp Gln Tyr Glu Pro Met
                450                     455                     460
gag aag tat ttt ggg cca cag aca aag aga tat ttg gac ttt gtt caa     1440
Glu Lys Tyr Phe Gly Pro Gln Thr Lys Arg Tyr Leu Asp Phe Val Gln
465                     470                     475                     480
tcg gta gaa gga gtt acc ggg att gga atg gtt gta cta atg acc ata     1488
Ser Val Glu Gly Val Thr Gly Ile Gly Met Val Val Leu Met Thr Ile
                485                     490                     495
gcc ttt aca ttg gct aca aca tgg ttc aga cgt aat aag ctc aac ctt     1536
Ala Phe Thr Leu Ala Thr Thr Trp Phe Arg Arg Asn Lys Leu Asn Leu
                500                     505                     510
cct gga cca ctg aag aaa ata aca ggc ttc aat gcc ttc tgg tac tct     1584
Pro Gly Pro Leu Lys Lys Ile Thr Gly Phe Asn Ala Phe Trp Tyr Ser
                515                     520                     525
cac cac tta ttt gtt atc gtc tac tcg ctt ctt gtc gtt cat gga ttc     1632
His His Leu Phe Val Ile Val Tyr Ser Leu Leu Val Val His Gly Phe
                530                     535                     540
tac gta tac ctc atc atc gag cca tgg tac aag aaa acg aca tgg atg     1680
Tyr Val Tyr Leu Ile Ile Glu Pro Trp Tyr Lys Lys Thr Thr Trp Met
545                     550                     555                     560
tat ttg atg gta ccg gtg gtt ctt tac ttg tgt gaa agg ctg att cgt     1728
Tyr Leu Met Val Pro Val Val Leu Tyr Leu Cys Glu Arg Leu Ile Arg
                565                     570                     575
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gca ttc agg tca agc gtc gag gct gtt tca gtg cta aag gtt gct gtg    1776
Ala Phe Arg Ser Ser Val Glu Ala Val Ser Val Leu Lys Val Ala Val
            580                 585                 590
tta cca ggg aat gtc ttg tcg ctt cac ttg tca aga cca agc aac ttc    1824
Leu Pro Gly Asn Val Leu Ser Leu His Leu Ser Arg Pro Ser Asn Phe
            595                 600                 605
aga tac aag agt gga caa tac atg tat ctc aac tgt tct gca gtt tct    1872
Arg Tyr Lys Ser Gly Gln Tyr Met Tyr Leu Asn Cys Ser Ala Val Ser
            610                 615                 620
aca tta gaa tgg cat cca ttc tca att acc tca gct cca gga gat gac    1920
Thr Leu Glu Trp His Pro Phe Ser Ile Thr Ser Ala Pro Gly Asp Asp
625                 630                 635                 640
tac ctc agt gtc cac atc agg gtt tta gga gac tgg act aag caa tta    1968
Tyr Leu Ser Val His Ile Arg Val Leu Gly Asp Trp Thr Lys Gln Leu
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aga tca tta ttc tct gag gtg tgc aag cca cgc cct cct gat gaa cac    2016
Arg Ser Leu Phe Ser Glu Val Cys Lys Pro Arg Pro Pro Asp Glu His
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aga ctg aac aga gcc gac tcg aag cac tgg gat tac atc cct gac ttt    2064
Arg Leu Asn Arg Ala Asp Ser Lys His Trp Asp Tyr Ile Pro Asp Phe
            675                 680                 685
cca aga atc cta att gat ggt cca tat gga gca cca gca caa gac tac    2112
Pro Arg Ile Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln Asp Tyr
            690                 695                 700
aag aag ttt gaa gtt gtt ctg cta gtg ggt cta gga atc ggt gcc act    2160
Lys Lys Phe Glu Val Val Leu Leu Val Gly Leu Gly Ile Gly Ala Thr
705                 710                 715                 720
ccg atg atc agc ata gtg agt gac ata atc aat aac ttg aaa ggc gtg    2208
Pro Met Ile Ser Ile Val Ser Asp Ile Ile Asn Asn Leu Lys Gly Val
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gaa gaa ggc agt aac cga aga cag tca ccg atc cat aat atg gtc aca    2256
Glu Glu Gly Ser Asn Arg Arg Gln Ser Pro Ile His Asn Met Val Thr
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cct cct gtt tct cca tca aga aaa agt gag acg ttc aga acc aag aga    2304
Pro Pro Val Ser Pro Ser Arg Lys Ser Glu Thr Phe Arg Thr Lys Arg
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gct tac ttc tac tgg gtc aca aga gag cag ggg tcg ttt gac tgg ttc    2352
Ala Tyr Phe Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe
            770                 775                 780
aag aac gtg atg gac gaa gtg act gaa aca gac cgc aaa aac gta att    2400
Lys Asn Val Met Asp Glu Val Thr Glu Thr Asp Arg Lys Asn Val Ile
785                 790                 795                 800
gag ctg cat aat tac tgc acc agc gtt tac gag gaa ggg gac gcg agg    2448
Glu Leu His Asn Tyr Cys Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg
                805                 810                 815
tct gca ctt atc acg atg ctc cag tct cta aac cat gct aag cat gga    2496
Ser Ala Leu Ile Thr Met Leu Gln Ser Leu Asn His Ala Lys His Gly
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Val Asp Val Val Ser Gly Thr Arg Val Met Ser His Phe Ala Arg Pro
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aac tgg aga agc gtt ttc aaa agg atc gct gtg aat cat cct aag act    2592
Asn Trp Arg Ser Val Phe Lys Arg Ile Ala Val Asn His Pro Lys Thr
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Arg Val Gly Val Phe Tyr Cys Gly Ala Ala Gly Leu Val Lys Glu Leu
865                 870                 875                 880
cga cac tta tca ctg gat ttc tct cat aag acc tcc acc aag ttc atc    2688
Arg His Leu Ser Leu Asp Phe Ser His Lys Thr Ser Thr Lys Phe Ile
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Phe His Lys Glu Asn Phe
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Ala Thr Thr Ser Asn Tyr Tyr Gly Glu Asp Glu Pro Tyr Val Glu Ile
         35                  40                  45
Thr Leu Asp Ile His Asp Asp Ser Val Ser Val Tyr Gly Leu Lys Ser
     50                  55                  60
Pro Asn His Arg Gly Ala Gly Ser Asn Tyr Glu Asp Gln Ser Leu Leu
 65                  70                  75                  80
Arg Gln Gly Arg Ser Gly Arg Ser Asn Ser Val Leu Lys Arg Leu Ala
             85                  90                  95
Ser Ser Val Ser Thr Gly Ile Thr Arg Val Ala Ser Ser Val Ser Ser
         100                 105                 110
Ser Ser Ala Arg Lys Pro Pro Arg Pro Gln Leu Ala Lys Leu Arg Arg
     115                 120                 125
Ser Lys Ser Arg Ala Glu Leu Ala Leu Lys Gly Leu Lys Phe Ile Thr
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Lys Thr Asp Gly Val Thr Gly Trp Pro Glu Val Glu Lys Arg Phe Tyr
145                 150                 155                 160
Val Met Thr Met Thr Asn Asn Gly Leu Leu His Arg Ser Arg Phe Gly
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Glu Cys Ile Gly Met Lys Ser Thr Glu Phe Ala Leu Ala Leu Phe Asp
         180                 185                 190
Ala Leu Ala Arg Arg Glu Asn Val Ser Gly Asp Ser Ile Asn Met Asn
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Glu Leu Lys Glu Phe Trp Lys Gln Ile Thr Asp Gln Asp Phe Asp Ser
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Arg Leu Arg Thr Phe Phe Ala Met Val Asp Lys Asp Ser Asp Gly Arg
225                 230                 235                 240
Leu Asn Glu Ala Glu Val Arg Glu Ile Ile Thr Leu Ser Ala Ser Ala
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Asn Glu Leu Asp Asn Ile Arg Arg Gln Ala Asp Glu Tyr Ala Ala Leu
         260                 265                 270
Ile Met Glu Glu Leu Asp Pro Tyr His Tyr Gly Tyr Ile Met Ile Glu
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Asn Leu Glu Ile Leu Leu Leu Gln Ala Pro Met Gln Asp Val Arg Asp
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Gly Glu Ser Lys Lys Leu Ser Lys Met Leu Ser Gln Asn Leu Met Val
305                 310                 315                 320
Pro Gln Ser Arg Asn Leu Gly Ala Arg Phe Cys Arg Gly Met Lys Tyr
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Phe Leu Phe Asp Asn Trp Lys Arg Val Trp Val Met Ala Leu Trp Ile
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Gly Ala Met Ala Gly Leu Phe Thr Trp Lys Phe Met Glu Tyr Arg Lys
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Arg Ser Ala Tyr Glu Val Met Gly Val Cys Val Cys Ile Ala Lys Gly
     370                 375                 380
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Cys Arg Asn Thr Ile Thr Trp Leu Arg Thr Lys Thr Lys Leu Ser Ala
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Ile Val Pro Phe Asp Asp Ser Leu Asn Phe His Lys Val Ile Ala Ile
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Glu Lys Tyr Phe Gly Pro Gln Thr Lys Arg Tyr Leu Asp Phe Val Gln
465                 470                 475                 480
Ser Val Glu Gly Val Thr Gly Ile Gly Met Val Val Leu Met Thr Ile
                    485                 490                 495
Ala Phe Thr Leu Ala Thr Thr Trp Phe Arg Arg Asn Lys Leu Asn Leu
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Pro Gly Pro Leu Lys Lys Ile Thr Gly Phe Asn Ala Phe Trp Tyr Ser
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His His Leu Phe Val Ile Val Tyr Ser Leu Leu Val Val His Gly Phe
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Tyr Leu Met Val Pro Val Val Leu Tyr Leu Cys Glu Arg Leu Ile Arg
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Ala Phe Arg Ser Ser Val Glu Ala Val Ser Val Leu Lys Val Ala Val
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Arg Tyr Lys Ser Gly Gln Tyr Met Tyr Leu Asn Cys Ser Ala Val Ser
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Tyr Leu Ser Val His Ile Arg Val Leu Gly Asp Trp Thr Lys Gln Leu
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Arg Ser Leu Phe Ser Glu Val Cys Lys Pro Arg Pro Pro Asp Glu His
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Arg Leu Asn Arg Ala Asp Ser Lys His Trp Asp Tyr Ile Pro Asp Phe
    675                 680                 685
Pro Arg Ile Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln Asp Tyr
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Lys Lys Phe Glu Val Val Leu Leu Val Gly Leu Gly Ile Gly Ala Thr
705                 710                 715                 720
Pro Met Ile Ser Ile Val Ser Asp Ile Ile Asn Asn Leu Lys Gly Val
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Glu Glu Gly Ser Asn Arg Arg Gln Ser Pro Ile His Asn Met Val Thr
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Pro Pro Val Ser Pro Ser Arg Lys Ser Glu Thr Phe Arg Thr Lys Arg
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Ala Tyr Phe Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe
    770                 775                 780
Lys Asn Val Met Asp Glu Val Thr Glu Thr Asp Arg Lys Asn Val Ile
785                 790                 795                 800
Glu Leu His Asn Tyr Cys Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg
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Ser Ala Leu Ile Thr Met Leu Gln Ser Leu Asn His Ala Lys His Gly
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Val Asp Val Val Ser Gly Thr Arg Val Met Ser His Phe Ala Arg Pro
            835                 840                 845
Asn Trp Arg Ser Val Phe Lys Arg Ile Ala Val Asn His Pro Lys Thr
    850                 855                 860
Arg Val Gly Val Phe Tyr Cys Gly Ala Ala Gly Leu Val Lys Glu Leu
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